National Workshop For Development of Curriculum on Management of BREAST FEEDING

Lady Hardinge Medical College &
Kalavati Saran Children's Hospital, New Delhi

Sponsored by Ministry of Health & Family Welfare, Government of India & UNICEF

1982

NATIONAL WORKSHOP FOR DEVELOPMENT OF CURRICULUM ON MANAGEMENT OF BREAST FEEDING (DCMBF)

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NATIONAL WORKSHOP FOR DEVELOPMENT OF CURRICULUM ON MANAGEMENT OF BREASE FEEDING (DCMBF)

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(Working Group)

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C O N T E N T S

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FOREWORD

Human milk is the food of choice for any infant. During the last few years, considerable emphasis has been placed on breast milk being the ideal nutrition for the new born and the infant.

Breast feeding is a popular method of infant feeding in India but has certain problems related to it viz., it is started too late, it is stopped too soon and often not substituted properly. To provide the right support to maintenance of breast feeding, it is desirable that the doctors of today and tomorrow have a sufficient knowledge about the physiology, techniques, problems and management of breast feeding. These aspects have received a very limited attention in the present day medical curriculum, leaving considerable lacunae in the field of infant nutrition.

This Workshop for Development of Curriculum on Management of Breast Feeding organised by the Ministry of Health and Family Welfare and UNICEF is a novel experiment in communication among the members of the medical profession and is expected to produce a perceptible improvement on infant feeding in particular and infant health in general. This will hopefully lead to a better management of breast feeding and infant nutrition with optimum utilisation of human milk.

(J.S. Baijal)
Additional Secretary & Commissioner
Family Welfare
Govt. of India
Ministry of Health & Family Welfare
New Delhi.

P R E F A C E

Under ideal conditions, a lactating mother should receive adequate support from the professionals, when faced with problems like 'My milk dried up yesterday', producing too much or too little of milk, sore nipples, baby refused to take the breast, when the baby is ill or she has an apprehension about adequacy of the quantity of breast milk. However, in such situations, the assistance from professionals is hardly adequate, chiefly because the medical curriculum and the medical textbooks are a poor guide to such a problem. Such an unsatisfactory state has been a contribution of many factors namely:

1) Breast feeding is taken as a discrete variable, manifesteo as yes or no, with the attitudes stating "If you can breast feed, you are luckly, if you can not, it is sheetr bad luck". Unfortunately the profession has failed to regard lactation as a continum, like any other physiological activity.

2) Very few research worker have felt interested in the practical aspects of lactation, as illustrated by the milk ejection reflax being established as a physiological entity, initially in the cows and much later in the humans.

3) A poor attention to breast feeding in the medical curriculum. Out of an average of 12 hours allotted to the breast in the undergraduat medical curriculum, 4 hours are taken by cancer and 2 by the lymphatic drainage, which is rarely seen but more often talked

about leaving only 6 hours for other aspects of the breast including breast feeding.

4) Disinclination of the profession, in taking advantage of the new practical knowledge about management of breast feeding and lactation.

Ever since the invention of a rubber nipple and the work of Louis Pasteur on milk hygiene, artificial feeding of infants has been considered a medical problem. Unfortunately the rules designed to make artificial feeding safe, were applied to breast feeding also. Further it was presumed that all the babies have an identical digestion, the same capacity and emptying time of stomach and all of them take 20 minutes for a feed. These presumptions led to a rigid time schedule for feeding a baby.

The practices are an indirect result of modernisation and a change from the home to a hospital delivery practice and has led to the loss of confidence, a woman has, in her ability to feed her baby through her own milk. Other factors, that have contributed to this loss of confidence, include.

1. Attrition of traditional customs where the old teach the young, about the different matters of life and the way of living.

2. Commercial pressures through advertising and marketing of infants foods and more often than not, by the health personnel.

3. Poor information of the health personnel, especially doctor regarding breast feeding. A WHO study of 1979 has shown that areas with highest antenatal care, have the lowest incidence of breast feeding.

4. Practical problems of women working for employment.

5. Different cultural attitudes about breast feeding especially the breast being regarded as a sex symbol and inability of the women to appreciate the fact that it is the pregnancy which alters the contours of the breast and breast feeding helps in retaining the form and shape of the breast.

A review of these factors, makes it imperative for us to evolve a strategy consisting of relevant education about breast feeding and management of its problems, to the profession, para-medical personnel and the public, adequate nutrition to the lactating mothers and appropriate curbs and restrictions on advertisements on infant feeds. It has to be appreciated that breast feeding is not just a physical activity, but involves a very delicate balance of the body and the mind. It is not enought for a woman to produce milk, it has to be made available to the baby, this is a learned response usually achieved thro ugh observing other woman while breast feeding. A successful lactation requires frequent sucking, even at night and a confidence on part of the mother and the family. On a large scale this can be achieved through a strategy consisting of:

1. A good knowledge of local customs, traditions and beliefs.

2. A thorough understanding of the process of lactation, nutritional needs of the infant and the composition of the milk.

3. Antenatal conditioning of the mother by instructions about breast feeding, explaining the morbidity of bottle feeding and realising the local cost of artificial feeding.

4. Avoidance of sedatives and episiotomy during delivery.

5. A post partum care consisting of encouraged demand feeding, augment secretion of milk, knowledge about methods of re-establishing lactation and discouraging complimentary feeds.

The present workshpp, besides attempting to bride a serious lacuna in medic curriculum, is an experiment in a novel strategy for communication with the profession. The innovative strategy has been developed by the Ministry of Family Welfare under the inspiring leadership of the commissioner Family Welfare Mr. J.S. Baijal, who is presiding on this function. An active collaboration at the financial assistance is a result of intensive efforts of the part of UNICEF especially Mr. David Hexton, the Regional Director and Miss Vishalakshi,the workshop has been rendered feasible through untiring efforts and unrestricted co-operation from Professor Mrs. Chawla, the Principal and the faculty of Lady Hardinge Medical College, especially Professor Mrs. Gujral, and Prof. Ved Prakash.

I shall to express my profound sense of gratitude to all of them. This workshop has a faculty with a multi-disciplinary representation of a national level involving pediatricians, obstetricians, community medicine experts, nutritionists, medical educators and health administrators. The participants include at least one senior pediatrician from each states. Each of the participants will be provided with a complete set of teaching materials developed in the workshop inclusive of handout, illustrations and transparencies. Each of the participant will be required to hold a similar workshop in his state in which one paediatrician from each distt. of the state will take part. Each of these district participants too will be provided with a similar teaching material and will be required to organise a workshop in which one doctor from each primary health centre of the district will take part. Thus it is expected that the products of this workshop will reach at least five to six thousand members of the medical profession, engaged in maternal and child care. It is expected that such a massive input of professional information will produce a definite perceptible impact on the infants nutrition with ultimate benefits to the morbidity and mortality of the infants.

PRINCIPLES OF EDUCATIONAL TECHNOLOGY

Dr. Indra Bhargava

A. Introduction:

An educational system is dynamic, complex and cyclical process, and is a part of a larger system, which it serves, and which determines and defines the educational requirements. Component activities of this system are:

1. An analysis of educational requirements;

2. Specification of educational objectives;

3. Assessment of the knowledge, skills and attitudes of the students at the commencement of the education.

4. Design of an educational activity e.g. course.

5. Implementation of the course.

6. Evaluation of effectiveness of the course.

B. Objectives:

An educational activity is directed towards certain changes in the

behaviour of the students. Before starting the course, the teacher must know, what changes in his students, he is trying to achieve. A specification of what a student should be able to do after the course, are referred to as:

1. Aims: as long term ends expressed in general terms or goals.

2. Objectives: as immediate ends, expressed in clear terms of measurable units of progress in relation to progress in direction of the aims of or goals.

I. Functions:

Objectives serve three important functions:

1. Specify to the students, what is expected of them, at the end of the course.

2. Provide a systematic means of devising map of evaluating their learning progress.

3. Provide to the teachers a basis for building up the teaching activities.

II. Categories:

Objectives can be classified into three general categories:

1. For knowledge: These objectives deal with the thinking process,

which ranges from a simple recall of facts to a logical and scientific thinking.

2. For skills: objectives concerned with the ability to perform a coordinated muscular activity to serve a purpose.

3. For attitudes: Objectives dealing with emotions and feelings.

III. Components:

An objective has three components, namely:

1. Performance: A precise definition of what a student must be able to do, in order to demonstrate his learning;

2. Conditions: A statement prescribing the conditions under which the student demonstrates the specified behaviour;

3. Standards: A statement setting the performance standard; against which the student's behaviour must be judged.

IV. Choice of verbs:

A well written objective requires a meticulous selection of performance words, which describe the action in observable, measurable and unambiguous terms. Some verbs are not precise and are open to a range of interpretations. Others are more precise, and not likely to be misinterpreted. These words are more suitable to learning objectives e. g. to list, to identify, to construct,

to define, to specify, to tabulate, to name, to put together, to operate. On the other hand, verbs like to recognise, to understand, to appreciate, to realise, to discuss, to be aware of and to describe are not suitable on account of a wide range of interpretations.

The following matrix can be a useful aid for writing complete objectives for a course.

No.	Type of learning	performance	condition	standards
1.				
2.				

V. Testing the objectives:

Validity of the objectives written for a course can be assessed by asking the following questions:

1. Is the performance word, unambiguously clear to the students?

2. Is the action called for by the performance word, observable and measurable?

3. Are the conditions under which the performance will be demonstrated, specified clearly?

C. Planning a course:

An educational programme is directed towards producing a change in the student's behaviour so that they:

- will know more about something, than that they know before;
- can do something better, than they could before;
- will feel differently about something, than they felt before;

For achieving this aim, following steps have to be taken:

1. Find out, how much the students already know, what they can already do and how they feel about it.
2. Determine, what they need to know in relation to the topic;
3. Decide who should teach them;
4. Decide, when they should be taught.
5. Determine, what constraints are or will be imposed on the teaching programme.
6. Outline the components of the programme and their timing.

D. Principles of learning:

Some principles of learning, which govern the choice of the teaching methods include:

1. Motivation: Motivated students learn better, therefore, a teaching method should motivate the students;

2. Participation: Students who participate in the teaching process learn better. Therefore, teaching methods involving students participation should be preferred;

3. Reinforcement: Feedback to the students in form of praise or approval must be an integral part of the teaching process.

4. Recognition of individual: Learning is augmented considerably, it differ in the ways, in which different individuals learn are recognised. In fact, each individual learns at his own rate, in his own manner.

5. Application: Teaching methods involving an application of theoretical knowledge in solving practical problems must be encouraged.

E. Methods of teaching:

The most suitable method of teaching, can be selected after a consider-ation of the course objectives, knowledge and intellectual ability of the students size of the class, time available, degree of students interests,the facilities available and the feedback to determine what the students have learnt.

I. Formal Lecture:

A formal lecture is a method of teaching, where the teacher speaks without interruption to the students, and at the end of the lecture, the students may or may not be given an opportunity to ask questions.

Main advantages of the lecture are, coverage of a wider range of material, unrestricted class size, full control of the lecture on the contents and sequence, extensive versatality and adaptability in relation to sequence, vocabulary and illustrations. On the other hand, main drawbacks of a lecture include a largely one way communication from lecturer to the students, without any interaction difficulties in retaining the student's attention, and extensive demands on teaching skills. In fact, effective lecturing is a highly skilled task where vocabulary planning, speech techniques, illustrations, presentation are critically important.

Structuring and timing of a lecture can be aided considerably by the use of the following matrix:

Time	Contents	Aids
10 minutes	Introduction	O.H.P.
15 minutes	Objective No. 1	Board & OHP
10 minutes	Objective No. 2	Board + 2X2
10 minutes	Conclusions	OHP
15 minutes	Questions & answers	Board

II. Lesson:

Lesson is another form of teaching method, where the material is presented in stages, teacher questions the student to assess what is being learnt and students question the teacher, to solve their difficulties. In this method, the students can learn at their own pace, participate in the learning

process and feel more motivated. Both the teacher and the student can get a feedback, and the lesson can be modulated in response to the students difficulties either collectively or individually. However, the class size gets restricted, requires a longer time for the same coverage and has to be confined to a method best suited for the majority and not necessarily the best one.

III. Group discussion:

In a group discussion, learning takes place by discussions among the students under guidance of a teacher. This method motivates the students, encourages critical and original thinking and improves the power off expression This method is an appropriate one. When the subject is capable of sustaining different opinions and viewpoints, students are mature and are being prepared. for a position of responsibility. Organisation of a group discussion calls for a special seating arrangement, an agenda providing appropriate guidance, a skillful teacher, an informal discussion but a formal summing up of conclusions reached.

IV. Questions in the classroom:

An effective communication can be built in the classroom through an intelligent use of purposeful question among the teacher and the students. This is essential to help the student in selecting, analysing, accepting and retaining the facts presented in a class, and avoid any misinterpretations in this respect. During the course of a lession, questions can be asked in relation to the introduction, development and conclusions of the lesson.

Questions during the introduction of a lesson are meant to find out how much of the subject is known to the students to revise what has been taught in the previous lesson and arouse their interest in the topic. During the development of the lesson, questions can help in assessing the student's learning, effectiveness of teaching methods and establishing personal rapport between the teacher and the students. Questions at the conclusion of the lesson, indicate what have they learnt and what may have to be taught again. Such questions should be based on a proper technique which takes care of barriers erected by the teacher like nervousness, odd mannerisms, unclear vocabulary, disjointed presentation and manner of speech, personal characteristics including previous learning and experience of the teacher and the taught, and physical environment of the classroom especially temperature, ventilation and noise.

V. Seminar:

A seminar is a discussion group, in which each student can actively participate within the allotted time usually by a short communication. It is initiated by a teacher, who control the discussion by his opening remarks asking questions to foster the discussion, and provide explanations whenever necessary. A seminar may be either students centred or teacher centred. In a student centred seminar, a few students prepare a specified subject beforehand and have a discussion on it following a short opening presentation. In a teacher oriented seminar, a teacher introduces the subject and heads the subsequent discussion.

1. Functions: A seminar may serve the following functions:

1. Promote learning through group discussion.
2. To consolidate earlier learning;
3. To develop the verbal skills of the students;
4. To enable the students to learn analysis and organisation procedures.
5. To moderate their attitudes by objective criticism.
6. To provide an experience in looking up relevant references.

2. Chairman:

The chairman of the seminar controls the discussion and encourages a discussion by others, without making his contribution obvious. He should be a good listerner, a quick thinker, capable of clear expression, be patient and tolerant, unbiased and have a capacity to summarise the discussions. He should not profess to know all the answers, be interested in his own viewpoint and expect everybody to agree with him.

b. Procedure:

Preparations for a seminar include an early announcement of the topic, decision on objectives of the seminar, preparation of introductory talk, structuring the discussions and provision of necessary handouts, equipments and an appropriate seating arrangement.

1. The chairman introduces the topic, states the objectives, lists the heading under which the topic will be discussed.

2. Following this, the topic can be presented in form of a short paper.

3. After this, the chairman can start discussion by posing a question.

4. The chairman should encourage the participation of both vocal and nonvocal members in expressing their opinions, agreements and disagreements. No one should be allowed to monopolise the discussions.

5. The chairman should lead the discussion, intervene for further clarification or summarising when necessary and an understandable vocabulary.

6. Summarise the discussion, at the end of each stage, and finally at the end of the seminar.

4. Questions:

Following types of questions, can be used to assist in conducting a seminar, namely:

1. Leading, which bring out specific answers;
2. Factual, which elicit facts;

3. Direct, which seek a contribution from a particular individual;
4. Overhead, which are directed to the whole group;
5. Controversial, designed to produce arguments from different viewpoints
6. Provocative, questions likely to provoke a strong reaction from most of the participants.
7. Redirected, questions from the chairman, being directed to another member.

5. Limitations:

The value of a seminar can be limited by:

1. A disproportion between number of viewpoints and the number of participants.

2. Participants having insufficient knowledge or inadequate preparation about the topic of the seminar;

3. Inability of the participants to express themselves properly;

4. Inability of the chairman to keep the discussion on rational lines;

5. Inability of some of the participants to accept critisism or contradiction, without taking offences;

6. Above all, a poor chairmanship.

E. Evaluation of teaching:

Evaluation of teaching can be either a subjective or an objective process. A subjective evaluation depends on the personal views and feelings of some individuals. As far as possible, such evaluation should not be used in relation to educational decisions. An objective evaluation is based on relevant facts unbiased by feelings or personal opinion. This evaluation provides the rational basis for a decision. A list has to be reliable i.e. give consistence results and valid i.e. a measure, what was intended to measure. A list can not be valid unless it is reliable, but can be reliable without being valid.

1. Effectiveness of teaching:

Effectiveness of teaching can be evaluated by an observer or a teacher himself, but the evaluation must be objective. Some of the following questions may be of help in this process.

1. Was the interest of the class aroused?
2. Was the subject made relevant?
3. Were the students motivated to learn?
4. Were the objectives made clear to the students?
5. Was new knowledge to be imparted, related to their previous knowledg
6. Were the teaching methods used appropriate?
7. Was the material presented in a logical order?
8. Was sufficient time allowed for each component?

9. Were the students tested that they have understood the subject?
10. Was the student participation properly controlled?
11. Was the presentation and delivery of words clear and fluent?
12. Did all the students learn what was taught?

2. Student's learning:

Assessment of student's learning consists of the following steps:

1. Specify the propose of assessment e.g. selection test, diagnostic test for self assessment or certification test;
2. Determine what is to be measured and in what weightage in relation to knowledge, skills and attitudes;
3. Define each of the above elements in measurable terms;
4. Choose appropriate assessment methods;
5. Collect information on student's learning;
6. Set standards of acceptable performance;
7. Summarise the analysis and report.

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STRUCTURE OF BREAST, PHYSIOLOGY OF LACTATION AND FACTORS AFFECTING MILK SECRETION

Dr. P. Paintal Dr. I. Bhargava

Breast or the mammary gland forms a major component of an integrated system specialized for production and secretion of milk as per the demands of the infant. Milk is one of the secretions secreted directly to the exterior. Absence of storage facility necessitates highly refined controlling mechanism, regulated by the neuro-endocrinological factors integrated via the hypothalamus.

Breast is a modified sebacious gland with a compound recemose ductal system converging on the nipple; on the apex of which are 15-25 openings. The nipple contains smooth muscle fibre, which on contraction can cause stiffening and erection. Nipple and areola are highly pigmented and have numerous cutaneous receptors. The pigmentation deepens during pregnancy, to fade only partially after child birth. It appears to be related to the functional activity of the gland and is utilized by the clinician as a sign of pregnancy.

Each mammary gland has 15-25 lobes, each draining independently and separated by irregular septa formed of dense connective tissue and adipose tissue, which penetrate into the lobe dividing it into lobules Each lobule consists of tubuloalveolar ducts, lined by secretory cells surrounded by few myoepithelial cells and basement membrane. Alveolar ducts lead to lobular ducts which unite to form a lactiferous duct that dilate near the alveolar margin as the lactiferous sinus, constrict again and bend abruptly to open on the surface of the nipple. Alveolar secretory cells synthesize

and secrete into the lumen, the myoepithelial cells contract to expel the contents i. e. the milk present in the lumen, to the exterior.

The size, shape and structure of the breast varies according to the age, sex and functional requirement in the newborn of both the sexes, the glands are small palpable, moveable soft masses containing distinct alveoli. Milk like secretion may be squeezed out by pressure, during the first 2 weeks. Sometimes the gland is enlarged 'MASTITIS NEONATORUM' a self limiting non-inflammatory condition. The breast involutes within few weeks after birth and thereafter remains quiescent till about puberty.

Development of breast is under hormonal control and can be divided into three phases.

First Phase: A Phase if isometric growth with present growth being an integral part of the growth of the body. This phase extends from birth to prepubertal period. Breasts are small and contain few rudimentary ducts only.

Second Phase: A Phase of growth and development of ducts amongst young girls around puberty. These changes are under the influence of Hypothalamic, pituitary and Ovarian hormones i. e. (i) estrogens produce thickening of the nipple and proliferation of duct system and (ii) progesterone producing the development of non-secretory alveoli and laying down of the septa, so that the mammary gland differentiates and develops a lobular character. - Hormones like gluco-corticoids, Insulin, prolactin and growth hormone are essential for this phase.

Third Phase: A phase of rapid growth of ducts and secretory alveoli during the first half of pregnancy. The adipose tissue and the connective tissue diminish, the lactiferous ducts proliferate, many more secretory alveoli are added. Estrogens stimulate the proliferation of ducts and progesterone of the secretory epithelium. However there is no secretory activity.

During the second half of the pregnancy, secretory activity is under the influence of Human Placental Hormones. Glucocorticoids, Insulin and growth Hormone are also essential. After the initiation of the secretory activity, the secretory cells get filled up with the secretory products which are discharged into the lumen along with the apical cell-wall and cytoplasm. These products are stored in the lumen causing further enlargement of the breast. After lactation, the secretory alveoli undergo involution and attain pre-pregnancy structure, except for few extra ducts and non-functional acini.

LACTATION - Lactation comprises of secretion and ejection of milk.

Secretion of Milk - Evidence of secretory activity appears during the fifth month of pregnancy but the mammary glands are kept in an unresponsive state by an excess of estrogens and progesterones, which inhibit the secretion of prolactin. The onset of milk secretion parallels the disappearance of steroids specially progesterone, from the blood, which leads to an increased secretion of prolactin. Physical contact with the baby, sight, smell and sound of the baby further augment the secretion of prolactin which stimulates the secretory activity.

A regular removal of milk is essential for maintenance of lactation. A woman with a healthy and hungry child, who sucks vigorously and empties the breast completely, secretes more milk than the mother of a child, who sucks less vigorously resulting in an incomplete emptying of breast. Sucking by the infant, leads to stimulation of hypothalamus and secretion of prolactin from the adenohypophysis and oxytocin from the neurohypophysis, resulting in a free flow of milk (sucking Reflex or let down reflex). Sensory nerves convey the nerve imulses to the hypothalamus, which inhibits the release of Prolactin inhibitory factor and stimulates the release of Prolactin Releasting factor resulting in secretion of prolactin and release of oxytocin from neurohypophysis. The magnitude of this response is influenced by various emotional and psychological factors.

B. Ejection of Milk: Oxytocin release during suckling stimulates the myoepithelial cells surrounding the alveoli and ducts to contract resulting in arise of intraalveolar pressure and the contents escape to the exterior via the patent ducts.

1. During lactation the secretion of gonadotrophin release factor is inhibited, consequently pituitary gonadotrophins, FSH & LH are not released, with suppression of cyclical changes in the ovary and ovulation (Lactation Amenorrhoea).

Factors affecting lactation:

1. Through Prolactin secretion.

Prolactin secretion is enhanced by - emptying of distended alveoli, sensory stimulation of breast, thus milk secretion is facilitated

Prolactin secretion is inhibited by - the presence of distended alveoli in the breast, mental stress, environmental disturbances, fear, anxiety etc. All these factors adversely affect lactation.

2. Through oxytocin secretion:

Oxytocin is released reflexly by a stimulation of the nipple during suckling. Increased sympathetic activity inhibits oxytocin release thereby interferes with successful breast feeding.

To summarise, an early contact with the baby, breast feeding in a peaceful quiet atmosphere, sound sleep, regulated physical exercise, encouragement and presence of a close relation with personal experience of breast feeding specially at the first few feeds are of great help in initiation of lactation. Education of expectant mothers regarding care of the nipple and the breast, advantage of breast feeding and breast milk, during antenatal period are of considerable help.

The secretory activity of the breast starts in the fifth month of pregnancy. The secretory products, alongwith the cellwall and cytoplasm are discharged into the lumen, where they are stored till the time of ejection. The first secretion at the onset of lactation is, therefore, unlike usual milk. Small quantity of this fluid, may be few drops, escape into the baby's mouth when it suckles, free flow occurs only after regular suckling, during the first 2 or 3 days.

The fluid secreted for the first 3 days, after initiation of lactation is called colostrum. It is yellowish in colour, on account of the presence of beta carotene and contains more proteins, less fats and lactose when compared with mature milk. 40-50% of the proteins present in colostrum are immuno-globulins which the newborn's gastrointestinal tract can absorb as such and store. These immunoglobulins provide immunity against infections for the first three months. A breast fed baby therefore is better protected against infections. Colostrum secretion is followed by intermediate milk. Mature milk appears after 3-4 weeks.

Milk proteins: Protein content of the cow's milk is much higher than that of human milk in relation to both quantity and quality.

Casein content of the human milk is very low - only 1/7th of the cow's milk. Moreover, human milk casein when treated with rennin forms an easily digestible floccular precipitate, while the cow's milk casein forms large solid masses, relatively insoluble and not so easy to digest.

The amino-acid patterns are also different. Excessive consumption of cow's milk may lead to a toxicity due to tyrosine accumulation and impairment of retinal development due to taurine deficiency.

Milk fats are present as triglycerides and free fatty acids. Cow's milk contains 8 times more free fatty acids as compared to the human milk

Vitamins and Minerals: Human milk usually provides sufficient vitamins and minerals for the first three months. Iron and vitamins specially A, C and D may have to be supplemented after 3 months.

Factors Affecting The Quantity And Composition of Milk:

Quantity - after the initiation of lactation, the milk output gradually increases to 500-700 ml per day at the end of one month. Thereafter it increases as per demands of the baby, reaching the maximum at 24 weeks (May be more than 1 litre/day).

Age, duration of pregnancy, diet, illness, psychic and hormonal factors influence the quantity and quality of milk. Protein content and fat content of milk in younger mothers is more than that in older mothers. Protein content of milk from the mother of pre-term infant is higher. Neither the quantity nor the quality of the milk are affected by early return of menstruation but both are affected adversely by anxiety, worry, emotional disturbances and physical ailments.

Role of mother's diet: Even if mother's diet is deficient, the quality and quantity of milk is not affected for the first 3-4 weeks. All the essential nutrients are extracted from the maternal tissues to be secreted in the milk resulting in weight loss. Later the quantity is affected.

The quantity and protein content of milk can be improved by increasing the protein intake of the mother. Higher fat intake results in an increased quantity and fat content. Carbonhydrate rich diet reduces the output and the protein content. Sixty percent of extra energy provided in the diet can be recovered from milk.

Lactose, casein and other milk proteins and the milk fats are actively synthesized by the alveolar cell from the circulating glucose, amino acids, plasma proteins and fatty acids. The ability to synthesize casein and lactose is present in the alveolar cell only. The enzymes necessary for the synthesis of phospho-protein-casein and for the production of galactose and lactose are present in the alveolar cell only.

Blood		Milk	
Glucose		Lactose	
		Glycerol	
	Acetate	Short Chain Fatty acids	Milk Fats
Fats		Long Chain Fatty acids	
Free amino acids		Casein	
Plasma Proteins		Lactalbumins	
		Lactaglobulins.	

Other constituents including drugs diffuse passively across the cell membbrane to be secreted into the lumen. Their M.P. ratio is less than one. Some drugs are secreted actively into the milk, M : P ratio is more than one.

DRUGS IN BREAST MILK

Most of the drugs circulating in the maternal blood enter the milk to a variable extend depending upon:

a) Size of molecule of water soluble drugs and their degree of ionization.

b) Solubility in fat of drugs with larger and unionisable molecules.

(c) Plasma level of the drug, i.e. effective concentration gradient.

(d) Degree of protein binding.

(e) pH - weak bases tend to be more concentrated in milk.

The breast fed baby therefore can receive the drug ingested by the mother, total intake depending upon the circulating level in maternal blood, extent of protein binding, M:P ratio and the milk intake of the baby. Further, the drug may be destroyed in the infant's stomach or intestines. The risk to the baby increases in the case of (i) pre-mature baby (ii) baby with enzyme deficiency specially of glucose - 6- phosphate dehydrogenase (iii) by active secretion of the drug into milk (iv) in the presence of maternal liver and/or kidneys damage.

Mostly the drug reaches the baby in very low doaage and that too, is destroyed in the baby's intestines. Wide variety of drugs therefore appear to be compatible with successful lactation and very few are contraindicated. Yet, all the drugs are secreted into the milk to some extent. It is advisable therefore to keep the drug administration during lactation to the minimum.

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BIOLOGICAL, PSYCHOLOGICAL, SOCIO-ECONOMIC AND IMMUNOLOGICAL PERSPECTIVES OF BREAST FEEDING

Dr. R.S. Dayal,

The process of technical advancement and evolution has dramatically changed man's methods to obtain food except in the matter of breast feeding of the newborn. Inspite of the influence of Western culture, it continues to hold its own rightful place in our country, even today.

Breast feeding reflects much more than a simple situation of "Commodity Supply". It has socio-economic, psychological, biological and immunological perspective as well.

A. PSYCHOLOGICAL ASPECTS:

Breast feeding provides strong bonds of affection between the mother and baby. The warmth and closeness of the mother's contact while breast feeding generates a feeling of security and satisfaction to the baby.

Anxiety, pain, fatigue, fright and feeling of neglect are some of the psychological factors leading to prolactin inhibition and lactation failure. Education of the mother and constant encouragement can prevent these adverse psychological factors.

B. BIOLOGICAL ASPECTS:

Breast feeding is good for mother's health. It leads to earlier uterine involution and thus restores the size of the uterus. It has been documented, that the incidence of breast cancer is only 1/5th of that in those who do not do so.

Further, lactation provides an endocrinological mechanism of fertility control and spacing of births. (It is, thus, a "blessing in disguise"). However, the contraceptive value of breast feeding is only 85-90 fool proof.

Breast feeding carries additional advantages in both upper and lower socio-economic groups. In the upper socio-economic groups it prevents development of bottle addiction syndrome and infantile obesity alongwith its possible hazards in adult life like coronary heart disease, diabetes and hypertension. In the low socio-economic group, breast feeding protects the baby from protein caloric malnutrition and infections.

C. SOCIO-ECONOMIC CONSIDERATIONS:

The eoonomic benefits of breast milk are manifold. It saves the mother not only the cost of milk but also that of fuel and accessories like bottles, nipples, brushes, detergents etc.

Gopalan (1977) made an attempt to compute the value of human milk in monetory terms. Twenty two million nursing mothers produce

3.7 million tonnes of milk annually. At the rate of Rs. 2/- per litre, the cost of milk in Delhi market in 1977, was worth Rs. 7,400 million per year. In order to elucidate the point further, he compared it with the health budget of the Govt. of India for the same year, Rs. 1732 million, which was less than one fourth of the computed value of human milk.

However, a number of studies indicate that educated mothers particularly from urban areas tend to stop breast feeding rather early.

D. IMMUNOLOGICAL ASPECT OF BREAST MILK:

Babies who are breast fed are protected against gastro-intestinal, respiratory and other infections as also against certain allergens. Some of the important factors providing immunological value to breast milk are:

Specific Immunological Factors:

1. Immunoglobulins:
   IgA, IgG, IgM
2. Cellular elements:
   Mainly Tlymphocytes and some B lymphocytes

Non-Specific Anti-Infective Factors:

1. Cellular elements (Phagocytes): Neutrophils, Polymorphs, Macrophages.

2. Various proteins and enzymes: Lactoferrin,
Lysozyme,
Complements:C3 and C4
B12 binding proteins.
Lactoperoxidase, Bifidus factor.

In general, the levels of anti-infective factors are much higher in colostrum and transitional milk. These levels fall in the mature milk, this rapid fall in level is compensated for by simultaneous increase in milk volume so that the daily intake of antibodies by breast fed babies is fairly constant throughout lactation, after an initial transient drop.

I. Immunoglobulins:

1. IgA: Its level in colostrum and transitional milk is greater than in serum milk IgA differs considerably from serum IgA. It is composed of a IgA dimer stabilised by two additional gluco-peptidases and secretory component (SC).

The resulting molecule is called secretory IgA (SIGA). This is much more resistant to enzyme attack and pH changes hence it is more suitable for local protective function.

SIGA - has two sub-groups: (a) $SIgA_1$ (less common) and (b) $SIgA_2$ (more common). Gut Mammery link: SIgA found in the milk are effective against the organisms usually found in the gut of mother.

This gut mammary link is a good example of nature's functioning. Mother and baby both are exposed to the same type of pathogens and as a result of this link the mucosal defence against these pathogens is transferred in the form of SIgA to the intestines of breast fed baby.

Antigens against which SIgA are commonly found in breast milk:

SIgA antibodies have been found in human milk against a large number of different enterobacteria and viruses.

(i) E. Coli (O and K antigens) - commonly responsible for neonatal sepsis.

(ii) V. cholerae 'O' antigen and enterotoxin.

(iii) Shigella and Salmonella 'O" antigen found in the milk of mothers living in areas where disease caused by these organisms are endemic.

(iv) Streptococci.

(v) Viruses: Polio, Coxsackie, entero, influenza A and respiratory synctial viruses.

Presence and titre of SIgA against various pathogens vary according to the endemicity of the area.

The mechanism of action of SIgA: SIgA does not prevent colonization of breast fed baby's gut with organisms. It is bound to the bacteria in the gut and thus prevents its attachment to the mucous membrane. It also interferes with the synthesis of enterocholin and iron binding compound,

by the organism (E. coli, Streptococcus mutans and Candida) requiring iron for their growth.

2. IgG - Their level in milk is higher than in serum. They are bactericidal to gram positive bacteria and viruses.

3. IgM - Levels of these are also higher in the milk. They are bactericidal to gram negative bacteria. As levels are low and almost undetectable in mature milk, infection due to gram negative bacteria, mainly E. coli, are more prevalent in infants.

II. Lymphocytes:

They are mostly 'T' lymphocytes, specially the killer type. They are cytotoxic to AFB, viruses and fungi and are also capable of producing interferon. Some B-lymphocytes are also found in breast milk and are reported to produce IgA.

III. Phagocytes:

Neutrophils and macrophages phagocytose the bacteria after the IgG and complement have prepared the bacteria for phagocytosis by neutralising antiphagocytic factor on the bacterial surface and binding the bacteria to the phagocyte.

IV. Lactoferrin:

It is an iron binding protein present in breast milk, and has a bacteriostatic effect on the organisms requiring iron for their growth, e.g. E. coli, Streptococci mutans and Candia albicans.

V. Lysozyme:

This helps in lysis of bacteria by breaking pipedoglycans present in the cell wall of gram positive bacteria and enterobacteria.

VI. Lactoperoxidase:

With hydrogen peroxide and thiocynate ion it has antibacterial effect on Streptococcus.

VII. B. 12 binding protein:

In association with specific antibodies, it strongly inhibits the growth of gram negative bacilli.

VIII. Complement components:

These are utilized in phagocytosis and lysis of bacteria by phagocytes and lysozyme along with antibodies.

IX. Bifidus factors:

It is a growth factor for lactobacillus bifidus and is absent in bovine milk. It facilitates the intestinal colonization of lactobacillus bifidus which produce lactic acid and acetic acid. The acidic pH of gut inhibits the growth of various gram negative bacteria and fungi.

Anti allergic properties of breast milk:

Genetically sensitized infants are at risk of developing atopic allergies. These atopic disorders, e.g. eczema and asthma, are less common in breast fed infants. This may be due, in part, to the effect of SIgA in limiting the absorption of dietary antigens.

Substitution of breast milk for cow's milk in infants with atopic eczema results in clinical improvement and fall in eosinophil count and serum IgE levels. Artificial feeding in such infants exposes him to the dangers of cow's milk allergy.

Finally, it is possible to boost breast milk mediated immunity against specific infections in infants by reimmunizing a previously exposed mother, as the SIgA levels in breast milk also rise. However, immunization of the women, not previously exposed to the antigen, increases serum antibodies only.

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HUMAN MILK IN COMPARISON TO BOVINE MILKS, ITS VARIATIONS AND COMMERCIAL MILK

Dr. A.B. Desai

Breast feeding is an integral part of the reproductive process; the natural and ideal way of feeding the infant and a unique biological and emotional basis for the child development. In our country almost all mothers start breast feeding and 50 - 70% continue it partly upto 1 year. Incidence and duration in rural areas is much higher than in urban years. Urbanization, working mothers, taboos on sex during breast feeding, availability and wrong notions regarding the efficacy of breast milk substitutes are few contributory factors. Breast feeding therefore, has to fight, against bovine milk and a host of commercial, attractively packed and widely advertised substitutes. Cows milk is the most popular substitute followed by buffalo, goat, sheep and camel's milk.

The composition of human milk varies widely. Colostrum, which is secreted during the first five days or so, contains less fat but the concentration of polyunsaturated long chain fatty-acids is high. It is rich in zinc, secretory immunoglobulin A, lactoferrin and lymphocytes. It may have a laxative or proteolytic effect to facilitate clearing of meconium.

Human milk has low protein content specially of casein. Besides the human milk protein is richer in nucleic acids. The ratio of sulfur containing amino-acids methionine and cystein is 3 times high. Phenylalanine

and tyrosine are low; the higher concentration of which in cow's milk may be adversely affecting the development. Human milk has specific immunological factors like lymphocytes and antibodies plus a host of non-specific factors.

The human milk has a nitrogen containing polysaccharide called 'bifidus factor' which is absent in bovine milks. This helps lactobacilli to multiply in intestine. The resulting production of acetic and lactic acids lower the pH of the stool thus inhibiting growth of various gram negative bacteria and fungi.

The principal carbohydrate in human milk is lactose. High lactose maintains low electrolyte concentration and also enhances growth of lactobacilli. Lactose is less sweet and thus is less habit forming, minimising problems of obesity, diabetes, atherosclerosis etc. in the later period.

The absorpition of human fat is 90% because of higher concentration of olein, a triglyceride. Polyunsaturated essential longchain fatty acids like linoleic acid and alpha linolenic acid are in higher concentration in human milk.

Though cholesterol content of human milk is very high as compared to cow's milk, (no studies have been published to demonstrate its adverse effects in long run).

Human milk casein micelle are rich in calcium and phosphorous, The calcium in human milk is particularly well absorbed as compared to

cow's milk for the following reasons: (i) pH of the gut is lower in breast fed infants (ii) calcium is less liable to combine with human milk protein because of its low casein content (iii) it is less liable to combine with fat because human fat is better absorbed and (iv) human milk contains much less phosphorous.

Improved maternal nutrition effects the output and vitamin content of breast milk.

Vitamins in a well nourished mother's milk are sufficient for a full term average weight baby for first - 2-3 months. Both human & cow's milk have relatively larger amounts of Vitamin A & smaller amounts of vitamin D. Vitamin C content of human milk is adequate.Cow's milk contains more thiamine & riboflavin & equal quantity of niacin. Thermolabile factors in bovine milk are liable to be destroyed. The high vitamin K content of cow's milk protects against hemorrhagic disease of the newborn.

The protein content of human milk is much lower than that of cows milk; this marked difference is because of the low casein content. Amongst the whey proteins, human milk does not contain betalactoglobulin which is present in cow's milk and is implicated in cow's milk allergy. Both human and cow's milk fat is mainly triglycerides but qualitatively, the former is far superior. Mineral content of cow's milk is higher except for copper and iron. Iron content of both human and cow's milk is very low but the absorption of human milk iron is more complete and is adequate for the first 3-4 months at least.

Carbohydrates, the ready source of energy, are 1.5 times higher in breast milk than in any other bovine milk. Fat content of buffalo's and sheep's milk is nearly double that of the human milk and may lead to steatorrhoea. Amongst bovine milks, goat's milk is particularly deficient in folate & this is responsible for megaloblastic anemia. Otherwise, goat's milk has a composition similar to the cow's milk. It is rich in essential fatty acids and is sometimes useful in management of cow's milk allergy.

Commercially available milk substitutes, composition per 100 cc of reconstituted formula is compared with human and bovine milk. Both types of lactogen contain same amount of carbohydrates in the form of lactose as is in human milk. Some preparations like lactodex and Raptakos special infant food contain 1.2 times more carbohydrates but mainly in form of maltodextrin. Fat content is same as that in human milk and some of the preparations like Raptakos incorporate more essential fatty acids as in human milk. Caloric value of all preparations is same as that of human milk except lactodex which is lower. Calories value of Lactodex formula can be increased by addition of Maltodex which is mainly maltodextrin. It has been used with advantage in preterm and low birth-weight babies. The concentration of minerals in commercial products are 2 to 4 times. nigher than that in human milk. The market preparations are fortified with minerals, trace elements and vitamins. The actual concentrations differ from preparation to preparation. The total ash content of human milk is 3 times lower than all commercial formulae. Except copper & iron cow's milk contains considerably more of all minerals, Iron content of both human & cow's milk is very low as compared to the substitutes but the absorption of human milk iron is more complete. Some of the organisms may thrive on higher iron content of the formulae.

Curd formation of bovine milks is made easier by pasteurisation & boiling; and that of commercial substitutes by homogenization and evaporation or by addition of alkalies or acids.

Infected bovine milks and unhygienic way of preparing & feeding milks of formulae always create problems in top fed babies. Breast feeding not only eliminates these avenues of infection but also offers protection by its special properties.

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PREPARATION FOR BREAST FEEDING

Dr. A. Chakravarty Dr. S. Kumari

I. Education about Breast feeding and Breast care:

Breast feeding is a natural process in human reproduction. Positive attitudes towards breast feeding through health education should be included in education system of young females in school going population. Most girls had their first thoughts about how they would feed their children, at 12-17 years of age. Hence the topic should be introduced in education at 10-12 years of age. This can be done in the form of:

A. Formal school education. This should include:

1. Attitude towards sex, knowledge of reproduction.
2. Breast development, figure and care of breasts.
3. Breast feeding, its benefits to the mother and the child.

B. Non formal education: Many girls, specially in rural areas, learn about sex, hygiene, reproduction, breast feeding and so forth from their mothers, grand mothers or elders in the community. With breast feeding being carried out without inhibition, these girls develop the right attitudes in these aspects as compared to girls with no such exposure.

II. Care of the breast during pregnancy need special emphasis as most of the problems in breast feeding later may be minimised by proper care during antenatal period.

1. Preparation of nipples: It should be a routine part of antenatal care. When a baby first sucks, nipples instead of moving gently against clothing or hanging free are pulled out, stretched strongly and repeatedly and sometimes chewed at. This can result in soreness, cracks and even bleeding. To avoid this, the nipples should be prepared during pregnancy by repeatedly pulling them out and stretching as much as possible without hurting. A few dozen 'pulling' at each nipple every day during the last month of pregnancy should help to accustom the nipple to the sucking action.

2. Nipple shape: The protractile property of the nipples are tested by pressing the areola between finger and thumb. 40% of primigravida may have poorly protractile nipple early in pregnancy, but they become protractile in three fourth of such cases, due to the action of estrogens, with advancement of pregnancy.

In the event of flat or retracted nipples, manual manipulation of nipple to make them protractile may be effective if done continuously for a few weeks. Although the effect of wearing breast shells during pregnancy is unproven, yet they can be used if available, but to be worn for several weeks.

3. Prenatal breast expression of milk is unnecessary and is not advised. However primigravida mothers should be taught and demonstrated the technique of milk expression in the antenatal period which will be useful to them after delivery.

4. Breast feeding and its advantages should be emphasized at antenatal clinics, so that the mothers develop positive attitudes for breast feeding after child birth.

III. Nutrition During Pregnancy: A woman needs about 300-400 more calories from second half of pregnancy onwards. An adequately balanced diet during pregnancy results in higher birth weights of the infants, and helps to sustain lactation for a longer period.

In practice, she is told to eat a little more of all items of the diet. The health worker/doctor should have adequate knowledge of local food habits and customs in a particular region when giving dietary advise.

IV. Nutrition of lactating mothers: During lactation 600-800 additional calories are required in mother's diet over the diet taken before pregnancy. An adequate weight gain during pregnancy yields a storage of reserve calories in form of fat stores, which helps to maintain lactation for a longer time.

Health and nutrition advise to pregnant and lactating mothers can be delivered by one or more of the following methods:

1. Individual advice
2. Group talks, group discussions

3. Posters, Flannel charts
4. Printed pamphlets
5. Film shows, slide demonstrations with and/or tape recorded talks.
6. Radio, T.V.

V. Antenatal information - or 'check list':

Every mother should know the following points about breast feeding before she gives birth to a baby:

1. The infant should try to suck within an hour of a normal delivery.
2. Colostrum is good for the infant.
3. Sucking in the first few days is essential.
4. The small amount of milk produced is usually enough for the baby's needs.
5. Sucking makes the mother's uterus contract.
6. The ability to breast feed does not depend upon the size of the breast.
7. The quality of the milk will always be good.
8. Bottle feeding is dangerous, except for women living in very hygienic conditions.

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INITIATION AND MAINTENANCE OF BREAST FEEDING

Dr. A. Chakravarty, Dr. Sudarshan Kumari

A well motivated relaxed mother, protractile nipples and vigorous sucking stimulus from the neonate in a congenial environment are all that is required for successful breast feeding.

1. Delivery Room: Breasts of all mothers, without a previous breast feeding experience should be checked in the delivery room. Skin to skin contact between mother and child soon after birth is helpful in promoting breast feeding later.

Early sucking within first hour of birth is a powerful promoter of successful breast feeding. If it is not possible to start breast feeding soon after delivery, all mothers must be urged to start as soon as possible.

2. Rooming in: Keeping the mother and baby together has been shown to be associated with successful lactation. Baby should be beside the mother so that she can see and touch it and not at the end of the bed for the benefit of staff.

3. Demand feeding: Demand feeding schedule is prefered over a rigid feeding schedule. There is sufficient evidence to show that the neonate has mechanisms for self regulation of food intake which are very effective.

4. Supplementary, Prelacteal feeds: are both undesirable and may inhibit milk secretion. They are ineffective in preventing neonatal weight loss, which is a physiological event.

In hot weather, plain boiled water by spoon may be given to avoid dehydration. Sugared water or 5% glucose may be given as complementary to breast feeds in situations where there is high risk of hypoglycemia in the babies (infants of diabetic mother, toxemia of pregnancy, small for date infants). A baby who loses more than 10 per cent of its birth weight or who takes longer than 14 days to regain it, may need temporary supplementation.

5. Technique of Breast Feeding: The mother should feed the child in a position that is convenient to both. It is preferable that her position allows the breast to fall towards the baby. The baby should be held close enough to the breast so as to keep the nipple and areola in place beside its mouth without much effort.

6. Frequency and duration of feeding: During first 24 hours, breast may be offered 4 to 6 times, even if there are no secretions in the breast, as sucking stimulates milk secretion. For first few days, the neonates may take 8 to 12 breast feeds per day, but by end of a week or two babies form their own feeding schedule, 3 or 4 hourly. Most of the babies discard

nightfeed by 1 month of age, but if he wants the night feed, he should not be denied it.

Babies vary in the duration of time they take at feeds. Most babies who suck correctly take 80-90 percent of the food from each breast in the first four minutes. Some babies take longer to finish. Very short feeds - of 1-2 minutes may leave the breast engorged and the baby unsatisfied. Alternate breasts should be first offered at feeding. This avoids encouragement and helps proper emptying of breasts.

7. The let down Reflex: Stimulation of the skin of nipple and areola leads to prolactin release from the pituitary into the maternal circulation, leading to increased milk production. Simultaneously contraction of myoepithelial cells surrounding each gland under the influence of oxytocin leads to ejection or squeezing of milk into milk ducts towards to nipple and is known as the "let down reflex".

After an infant is put to breast, let down may take 20 seconds to 3 minutes and if a baby is hungry and finishes the milk in lacteal sinuses á delay in let down reflex will frustrate the infant, leading to maternal anxiety which further may inhibit the let down reflex. Early part of the feed has less fat while later part (called hind milk which follows let down reflex) has higher protein, fat and calories. Milk can be let down by nipple stimulation or other stimuli e. g. cry of infant, sight of her infant or smell.

Establishment of successful let down reflex and proper emptying of breast are the two key factors operating in successful establishment of lactation.

8. Adequacy of Breast milk: Adequacy of breast milk is judged by:

1. Satisfactory weight gain
2. Infant sleeps following a feed and demands feed not earlier than 2 hours after first two weeks of life.

D. BREAST FEEDING DO'S AND DO NOTS

I. Do's of Breast Feeding:

1. Development of positive attitudes in young girls and prospective mothers towards breast feeding at school level, antenatal clinics and in postnatal period.

2. Close contact of mother and her child soon after delivery is beneficial in promotion of breast feeding. Close skin contact between the two should be encouraged.

3. First feeds should be given soon after delivery, followed by an exclusively demand feeding schedule subsequently, alternating breasts at each feed.

4. Remember that sucking is the best stimulus for successful lactation.

5. The best position for feeding is the one which is comfortable to both, mother and the child, but nose should be clear from breast while feeding.

6. Maintain lactation even if the child has minor illnesses.

7. Breast engorgement is minimised with demand feeding schedule and empty the breasts after child feeds from breasts, if engorged.

8. Support of relatives soon after delivery is beneficial in initiation of breast feeding.

9. Give nutritious balanced diet, about 1/3rd more than before pregnancy, will help maintenance of lactation.

10. Do not diagnose diarrhoea in breast fed babies by frequent 6-10 stools which are normal with breast feeds.

II. Do nots:

1. Do not separate mother and infant soon after birth. Practice rooming in of mother and baby throughout day and night.

2. Do not give bottle or prelacteal feeds as mechanism of breast and bottle feeding are quite different.

3. Do not follow a fixed feeding schedule while breast feeding.

4. Do not omit night feed if infant demands it.

5. Do not feed from engorged breasts, express milk from breasts and then feed. Feeding from engorged breasts may cause sore nipples, cracked nipples or may lead to local infection.

6. Colostrum should not be discarded, as it is nutritious and also has more anti-infective factors than in later milk.

7. Do not stop breast feeding with minor sickness, like mild respiratory infection, diarrhoea, fever etc.

8. Do not stop breast feeding during mensturation or for cosmetic reasons.

9. Do not put baby to breast against mother's wishes, it may cause more harm, as mother may develop antipathy to her child.

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MANAGEMENT OF SOME PROBLEMS IN BREAST FEEDING

Prof. B.N.S. Walia,

Management of Breast Feeding: It requires attention to the following:

1. Mother's nails should be short and clean. Avoid touching breasts by hands or handkerchief.

2. Mother washes her hands before touching breasts.

3. Wash the breasts once every day.

4. Spirit and antiseptics are not required.

5. Emolients to be used, if nipples are painful.

6. Supporting brassieres should be worn.

7. Before infant is taken to breast, any discharges from the eyes or nose should be removed and the napkins too should be removed and the napkins too should be changed.

8. Serenity facilitates the let down reflex.

9. Mother and baby should be in comfortable position. Baby is held in upright position. Mother sitting up leaning slightly forward, supports the breast in the palm of her hand, allowing the nipple to pass between her two fingers

The baby can feed equally well when the mother is lying on her side. Infants head should be slightly raised by mother's arm in lying down feeding position to prevent regurigitation of milk. The nipples may be flat If so, the aerola should be gently stroked and stretched away from the nipple which is then pulled out with the fingers or a breast pump used to draw it out. Baby may be encouraged by a little colostrum expressed into his mouth.

Prevention of sore cracked nipples: The nostrils of infant must be clear otherwise baby will repeatedly let go off the nipple in order to breathe and this will bruise it.

The baby should not be abruptly removed from breast. When he has finished sucking, the outer border of upper lip is lifted to break suction. The nipples should be dried after each feed and if tender a soothing ointment is applied. Sucking time is no longer limited as simple sucking stimulates milk formation in first few days.

Treatment of cracked nipples: Fissures are examined with a hand lens. Infant is taken off breast for 24 hours and milk is expressed manually. Exposure to an electric lamp 30 cm distant or to air for 20 minutes every 6 hrs., will promote healing. Application of antiseptic creams may help. Nipple shields may be used if other measures do nothelp.

Blood stained milk: This may be from cracked nipples or areola. However, if blood stained discharge from nipples continues, papilloma or breast cancer should be excluded.

Difficulties in Breast feeding may result from factors relating to the mother or the baby.

A) Maternal factors eg.

1) Unwillingness
2) Anxiety (Previous failure, primipara)
3) Poor health
4) Inadequate milk secretion.
5) Engorgement of breast:

This commonly occurs between 3rd-5th day of the puerperium. It may effect 40 percent of the primiparas to some extent. Breasts are full, heavy and hard, due to venous and lymphatic engorgement and edema. A brief spike of fever may occur at this time. It is sometimes called a milk fever, and it is not due to bacterial infections. However, if it persists more than 24 hours it may be something more serious.

Treatment:

Slight Engorgement:

1. Breasts are bathed in hot water before feeds, and stroked gently with soaped hand towards the nipples.

2. Baby is allowed to suck for a few minutes and then the remaining milk is expressed.

3. Vaseline may be applied to nipple.

4. Firm supporting brassiere should be used

Severe Engorgement: The baby is notput to breast. Manual expression is avoided if the breasts are so tense, hard and swollen that nipple is flattened and the baby can not grasp the areola. 10 mg of oestrogen in a single dose will help relieve pains and reduce the engorgement. The baby is put to the breast as soon as the nipple can be grasped.

B) Difficulties due to Baby

Cleft lip and plate
Sore tongue
Snuffles
Mental retardation or cerebral palsy
Asphyxia or Intracranial injury
Janudice.

Manual Expression of Breast Milk:

The mother sits in an upright position, with the fingers of one hand, forming the letter 'C' . The thumb is then placed on the top of the breast at the edge of the areola and the other fingers are placed on the bottom of the breast, with the first finger opposite the thumb. The thumb and forefinger are at the sametime gently pressed in towards each other and down towards the tip of the nipple, without being moved from their positions on the breast by drawing the breast back towards the chest wall and compressing the sinuses, milk is expressed in small spurts. Expression

is continued till stream is reduced to drops. Both breasts should be expressed twice during the single session. Between the 10-14th day, the oestrogen level rises and works against the prolactin hormone that influences the production of milk. Breasts stimulated by repeated emptying will continue to manufacture milk and fill up again after the initial influence of the oestrogen hormones. This is the time when many mothers stop nursing. If breast feeds are supplemented at this time and the curve of milk production kept high by hand expression, at the time of the slump, they will have enough milk for the infant

Hand Pump Expression:

The breast cup is centered over the areolar area . Bulb end is depressed. Wetting the breast may be essential to get a tight seal. As the bulb is gradually released, gentle suction is exerted, which draws the milk into the funnel. To break the suction press forefinger, against the breast, near the edge of cup. Repeat procedure till milk flow is reduced to drops, expressing twice on each side.

Electric Breast Pump Expression:

The equall electric breast pump is the most efficient and comfortable means of emptying the breast. A vacuum cycle and slight positive pressure alternate; this stimulates infants sucking process. When the breast is engorged, a small amount of milk is first expressed manually before using the pump, this avoids nipple trauma.

To start with, the pump is run at minimum pressure. If milk flow is adequate, the pressure need not be increased. The mother is instructed to massage gently and compress the surrounding tissue with her free hand to promote complete emptying. Hot towels are applied to the other breast while one is being pumped.

Initially pump is worked for 5 minutes on each side, increasing gradually to 10-15 minutes. The let down reflex is usually initiated in 3 minutes. If the nippes are tender, alternating breasts every 3 minutes is sometimes effective. This is also helpful when the breasts are heavily engorged.

Causes of Lactation failure:

Worry
Maternal unwillingness
Ignorance and mismanagement
Separation of mother and child
Malformations of nipple
Child's refusal or inability to suck
Lack of milk secretion.

An Aphorism

Common symptoms like crying, poor sucking, vomitting colic and diarrhoea etc. are caused by "Too like food, too much food, wrong food or wrong technique"; Add to these infection, and the common causes are covered.

Inverted nipples:

The nipples may be below the level of the skin surface and great difficulty is experienced in everting them. Sometimes they are flat (or level with skin surface) and in both cases they may be improved by "wool which" shells kept under the brassiers during antenatal period

Prevention of nipple cracks:

Nipple massage by rolling them between the finger and thumb and drawing them out every day during the last 2 months of pregnancy using a good face soap and water is recommended.

The Sore mouthed infant: Such infants start screaming as soon as put to mouth. The commonest cause is thrush. Gention Violet 1 percent solution may be applied by putting few drops to tongue which will automatically spread over the buccal surface. This may be done 3 to 4 times a day and application is done preferably after a feed. Haymycin or dequadin paint are equally useful and less messy but relatively more expensive.

Nasal obstruction:

Complete nasal obstruction as caused by choanal atresia is handled by providing an oral air way and tube feeding.

Partial nasal obstruction e. g. common cold can be generally managed by instillation of 2-3 nose drops containing 0. 25 percent epherdrine

in normal saline, prior to feeding. Paraffin containing nose drops are liable to produce inhalation pneumonia and should be avoided.

Complete cleft palate:

To aid in the feeding and to act as a guide plate in the development and growth of alveolar margins (more for the latter purpose) a plastic orthodontic guide plate similar to a dental plate is made by the orthodontist The aid obturates the oronasal aperture and also has a guiding effect upon the alveolar margins following closure of the patient's cleft lip defect. The guide plate is attached to a thread for removal, replacement and safety reasons. The plate should be removed and cleaned 3 times per day.

Refusal of one breast:

Some babies refuse to suck from one breast. In a few of these a depressed nipple prevents adequate sucking. In most cases however there is no cause. In such cases try a different position so that the baby is at mother's side, with his feet behind her as for twins. If this fails, express milk from the breast which is refused and give it to him with spoon.

Refusal of Breast in the old Baby:

Some infants 3-4 month of age or older start refusing the breast suddenly without any reason. He is expressing his readiness for the cup. Let him have it.

Crying when put to breast:

This often happens in the first 10 days of life. Even though the baby is hungry, he give up after sucking for a minute or two and start screaming. Attempts to force him to take the breast make him more bellingerant. The real reason for this is not known. The danger of the situation is that the mother assumes that her milk is not suiting the baby and is likely to shift to bottle. If mother could be persuaded to be patient for 10 days or so, he will begin to take the breast easily.

Some reasons offered for this difficulty are:

a) Obstruction of baby's nose by his upper lip or breast during sucking.

b) Depressed nipple

c) Sometimes it starts because the breast is tight as a result of poor sucking in first 2 days. In such cases expression of some milk should help.

Rejection of Breast:

By a tired or over excited infant is tackled, by expressing a little milk, placing the wet nipple on thedorsum of infants tongue, which initiat sucking. If delayed draught reflex occurs, the mother may induce the flow before putting the baby to her breast.

Wind must be brought out by burping. Antispasmodic and gripe waters are unnecessary.

Dehydration Fever: may be the cause of drowsiness and disinclination to feed. Such infants have generally lost more than 10 percent of weight by the 3rd-4th day. Additional water in take brings down the temperature. Infection should be excluded.

Tired Babies: An infant who has been crying too much, may be too tired to suck. The baby may also be reluctant to persist with sucking if earlier failure due to defects in nipple, engorgement preventing sucking or an empty breast due to delayed draught reflex.

Late starters: Some infants are sleepy and therefore not interested in feeds in the first few days. This may be due to maternal sedation, jaundice or brain trauma/anoxia. Improvement takes place over a week. Breast milk expression is essential during this period to prevent engorgement and to stimulate lactation.

Failure to suck well: Initial failure to suck well in the first 3 days should not be accepted as a 'failure' necessitating use of top feeds. Competent guidance of mother and infant will surmount most of these difficulties.

Causes of failure to suck:

1. Breast — Engorgement

2. a.	Nipple	Not protractile or too large
b.	Nose obstruction	Congenital anomalies of nose. - Viral infections. - Breast falls over the nose.
3.	Short gestation	Infection, Brain injury, anoxia
4.	Tachycardia	Respiratory or cardiac causes

The poor sucker:

Some babies are drowsy and do not bother about food for the first few days. Check that he is not too warm or too cold. Such babies should be fed by a clock regulated schedule every 3 hours. Fortunately in a few weeks their interest in food awakens.

Neurological dys-function:

Perinatal brain injury may present as failure to suck well as the babies are slow learners. As many of them succeed well eventually, mother should be encouraged not to give up trying too quickly.

Feeding of low birth weight infant:

Feeding is started within 2-3 hours of birth. Infant with weight below 1500 gms should be fed intravenously by gavage feeding and later by bottle. He later graduates on to breast feeding. Her lactation has to be maintained in the early stages by expression.

Twins: The most convenient position to feed the twins is shown in Fig. 9. The mother has to support the head of each twin with one hand & the bodies of the children are at her sides. The feet are behind her. However, babies can be fed separately or simultaneously according to the convenience of the mother. Similarly whether each twin should have its own breast or whether they should alternate can be decided by the mother. Neurologists, however suggested that change from side to side could be of importance for the normal neurological development of infants.

A mother who feeds two babies produces a very large amount milk and needs to eat and drink enough herself. If milk is not enough for both, babies should be alternated on breast and bottle.

What to do if a Women has failed to breast feed previous children:

1. Prepare the breasts in antenatal period.

2. Reassure her that there is no reason why she should not succeed, if she is keen to do it.

3. Express the milk after every feed for the first 2 weeks, giving the baby milk with spoon.

4. Let the baby feed according to his demand.

5. No bottle feed is to be given for 4 days, unless there is no available breast milk on 4th day.

6. Advise adequatee rest.

7. Judge adequacy of milk secretion only by weight gain.

Suppression of Lactation:

More easy if treatment started on Ist day of puerperium:

Bromocriptive (Partodel) is effective and non oestrogenie preparation. Take baby off breast.

Do not express milk even if breasts are hard, heavy and painful. Breast binders are used . . These are applied with woman lying flat, holding her breasts inwards and upwards. Analgesics (Pentazocin Distalgesic, or Panasorty)may be used.

Infection: This is a common cause of poor feeding.

1. Thrush

2. Infection in the nose, ears, chest, skin,urinary tract or meninges should be saught. Appropriate investigations should be ordered. Antibiotics are indicated on suspicion.

Cleft Lip: Minor degrees of cleft lip do not interfere with feeding. If only the upper lip is cleft, the mother can often, ensure proper sucking merely by putting her finger over the opening.

If bottle feeding is imperative, a soft nipple with a larger hole' is placed in baby's mouth, while feeding, the baby should be held in sitting position.

Spoon and dropper feedings are unsatisfactory, as babies get more air than food, though a spoon of special shape has been found useful by Mackeith and Wood (1971)

A New pregnancy during lactation:

Nursing during a new pregnancy does no harm to the mother or to either of the children provided the mother gets sufficient food. There is however no point in trying to persuade an unwilling mother to continue breast feeding.

Infants with family history of allergy:

Human milk is thought to be less likely to head to allergic problem than other foods. But it is possible that there is a link between the kind of food eaten in early life, and the later development of allergy. The mothers are best advised to avoid well known strong allergens in her food and that they are prepared mentally to breast fed her infant as long as possible.

RESISTANCE TO BREAST FEEDING AND HOW TO OVERCOME IT

Dr. Amla Rama Rao

Introduction:

Breast feeding and mothering has always been considered as one entity all over the world. Till very recently breast feeding was a natural instinct and lactation a natural phenomenon with every mother. In late 19th century, a rapid decline in the practice of breast feeding was seen mainly due to formation of a female work force and urbanization all over the world. Though, there always have been a few mothers who evaded breast feeding the number increased tremendously during and after the second World War, as a sequelae of increased technological domination and a very active infant food industry. All these factors popularised bottle feeding all over the world, and it became a status symbol for the mothers, even the poorest. While this may have been a boon to the females of the western society, giving them more time to work and earn, it came as a catastrophe to the third world bringing with it the massive problem of diarrhoea, dysentry and malnutrition.

Causes for discontinuation:

Following are the few causes for discontinuation of milk in various Indian studies

1. Pregnancy
2. Insufficient milk
3. Misconception and wrong advice
4. Illness of mother and child
5. Pre-occupation
6. Lack of knowledge
7. Freedom of movement
8 Concern about figure
9. Child was not sucking
10. Lack of confidence in breast feeding
11 Engorgement of Breast
12. Pain in Breast
13. Doctors and paramedical personnels' advice.

Process of resistance building:

Findings from research all over the world have shown that breast feeding is directly related to bio-social phenomenon of the community. But strongly it has been a domain of paediatricians and has never been seriously perceived as a community health problem deeply related to socio-cultural structure of the community. Instinctive lactation is common to all animals including human beings but if we put aside the physiological aspect of lactation and consider breast feeding behaviour of humans we find that the condition is not as simple as it appeared. A person is a sum of all that happens to him from childhood to adulthood and this behaviour is governed by the cumulative effect of various psycho-social environments in which he lives and grows up. Similarly the behaviour of breast feeding is also an interaction of many factors playing in psycho-social environments of the mother. There may be processes of "positive feed backs" which may encourage breast feeding or 'negative feed backs' to dampen the process and alternate methods of infant feeding are adopted. Thinking of the correlations of variables that can bring about the changes in relation to breast feeding we do not find much work in this country, as the problem of resistance does not yet, exist but if we refer to the work of western counterparts, we find that the behaviour towards breast feeding depends on mothers attitude, knowledge and personality traits, precipitated by the experiences during pregnancy, labour and postnatal period. In our rural society from childhood one has seen one's mother or close relations and neighbours breast feeding the children. They can do that in presence of other people without any shame or guilt and continue to work while putting the baby to breast without any hesitation or inhibition. It is

important to stress the importance of this early childhood experience and what society expects as a permissible normal behaviour of simplicity and naturalness is becoming rare amongst our urban elites and the bottle feeding instead is becoming a status symbol. More and more mothers are taking to it without thinking of its disadvantages

Recognising that there is a close relationship between mother and young child's feeding with that of social and economic development, urgent action is required to promote the health and nutrition of infant and mothers.

The close contact for mother and her infant during the first minutes and hours after birth is crucial for the formation of a strong attachment and may significantly increase the incidence and duration of breast feeding. The observation made by the workers emphasises that just 45 minutes of early contact may have made profound effect than was previously appreciated and compells us to reconsider hospital practice where even briefly separating mother from infant is not desirable. Early close contact can be provided easily and economically and may have beneficial effect on the infant's health in hsopital practice also. The mother delivered at home seems to have no problem of lactation whereas mother delivering in the hospital are not able to feed their babies as well. Episiotomies and other unnecessary interference in hospitals have no doubt effected the attitude and response of the mothers. Alternatively when a woman who delivers at home with the help of midwives or dais, the baby is put next to the mother without even washing or cleaning and she is allowed to handle the baby. This alongwith eye to eye contact of the mother acts as "let-down reflex".

Having decided that human milk and breast feeding have overwhelming advantages in infant growth and developments anywhere in the world we must ask what can be done to improve the situation by preventing the influence of western counterparts who at present are looking for solutions to go back to older methods and techniques of delivery and child care. The main need is to try and motivate those who are concerned with policy, that is, the politicians, the administrators and the leaders in the field of health and nutrition. The health services and health staff today are geared towards bottle feeding culture of west. The conservation of medical education is as being what it is, will need a lot of effort to bring about any changes.

Health organisation:

A few words about the health organisation of India may not be very much out of place here:

- Health organisation: Planned
  Proposed
- Health organisation: District level and below
- Health organisation: Referal system.

Some of the simpler ways in which health services can be modified, particularly in maternity wards have been enumerated.

A. ADMINISTRATION:

1. Hospital and Nursing Homes:

Hospitals and nursing homes play an important role in motivating, preparing and continuing breast feeding practices for the population who go to them for health care.

1.1 Antenatal Care: Avoid wrong information on breast feeding. Talk on advantages and maternal diet alongwith breast care during this period. Need for emphasis on properties of colostrum as the first feed to baby, is important to change the age old habit of wasting it.

1.2 Natal care: Least interference, avoidance of drugs, private atmosphere, baby next to mother as early as possible are some of the important factors that should be kept in mind.

1.3 Postnatal period: Suckling must be encouraged as early as possible so as to avoid bottle, water to be fed by bottle, or spoon or dropper on first day.

1.4 Premature Units: The mothers should be allowed to express the breast milk and then feed the child with either bottle or spoon so as to achieve a continued breast feeding once the child is discharged from the hospital.

Follow up visits in the mother's own home to promote breast feeding after discharge from the hospital is also required.

1.5 Children's ward: Mother should be allowed to breast feed the baby and all children's hospitals should have a room for mothers where they can stay to feed the babies.

2. Health Centres:

Educational programmes in health centres, hospitals and nursing homes must be geared to the need of the community. Avoid posters showing healthy babies fed on commercial infant feeds. Calenders and posters of healthy babies fed on breast milk should be displayed in the labour rooms, maternity wards as well in children's wards.

3. Community:

In the community, attitude for action starts at an early stage and school going girls entering into puberty must be told the importance of breast milk for the health of the mother and child. Messages through mass media instruments like radio and television about advantages of breast milk should be organized. Mahila Mandals and Mother's Clubs should be used as places for educating young mothers. Slogans in different languages in public places must be repeated at different intervals.

B. TRAINING:

There is hardly any contraindication to breast feeding. Tuberculosis is often considered a reason for discontinuation of breast milk. But bottle feeding could be of a similar proximity for a mother and child

and it only imposes on economic strain and entails extra work for the mother. Similarly diabetes also is no contraindication for stopping breast milk.

Joint teaching sessions of students in allied health fields will lead to better understanding of how each discipline can contribute to the promotion of breast feeding.

Doctors, nurses, para-medicals, health volunteers village dais and anyone else in the community must be given proper training in relation to the breast feeding programmes. More mothers get confused because they are given different advices day by day by different people.

All midwives should deal with the problem of breast feeding as a part of the preparation of women for parenthood. Breast feeding should form an important topic for training programme of midwives and a topic of discussion in mothercraft classes.

Education in schools in relation to advantages of breast feeding and mothercraft would also make a dent for the newer generation. It is always better to restric the advice to a limitedarea if one is not to do harm. The informer should be able to give only as much information as is relevant to the mothers, family, housing and finance.

C. RESEARCH:

Last but not the least, research in newer methods of information system is required. Longitudinal studies on behaviour patterns, growth

of a child who is fed on breast milk and the one who is not, in detail in different communities must be available to the health workers to be able to recognise the training programme at all levels. A lot of work is being done in this relation but information never reaches the health centre or the community health workers who in turn are expected to bring about changes in the behaviour of mothers.

Causes for discontinuation of breast milk: Pregnancy, insufficient milk, misconception & wrong advice, illness of mother & child, pre-coccupation, lack of knowledge fear of difficulty in subsequent discontinuation, freedom of movement, concern about figure, child was notsucking, lack of confidence in breast milk, baby was hungry, engorgement of breast, pain in breast, doctors and para-medical personnel's advice.

Social factors for resistance of breast milk:

Mother's education, urbanization, nuclear families, work opportunities, availability of commercial milk, age of the mother, social and cultural taboos.

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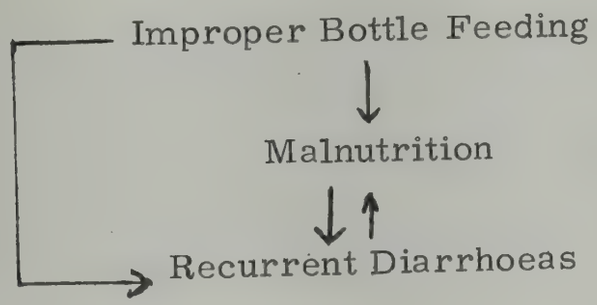
BOTTLE FEEDING - DRAWBACKS AND PRACTICAL GUIDELINES

Dr. (Mrs.) Vimla Vijaya Gujral,

Breast feeding is an ideal, safe and complete food up to 4-6 months of age for a young infant, therefore, it should be encouraged in all cases. The risk in not giving breast milk are particularly great in a developing country. Ignorance, poverty, and lack of resources result in the misuse of other milks, which may be given in a diluted manner, in dirty bottles resulting in malnutrition and diarrhoea. A vicious cycle of increasing malnutrition and recurrent diarrhoeas ensues which is further prepetuated by improper bottle feeding.



Mere health education, too, may not necessarily solve all the problems, as poor environmental sanitation, lack of suitable water supply and paucity of resources make it difficult for the really underprivileged group to follow relevant health instructions. On account of poverty, purchase of sufficient bottles or repeated boiling of a single bottle may not be feasible. For the same reason mothers may also give excessively diluted milk in order to make the amount purchased last longer.

Hence, an unjustified introduction of bottle feeding is to be totally condemned. This includes use of a bottle feed,

a) within the first few days of life before the breast milk is fully established;
b) to get the baby "used" to a bottle
c) for illnesses of the mother and infant.
d) because of death of previous baby, and
e) because of a wrong idea on part of the relatives, friends, or health professionals, that a particular mother's milk does not "suit" her baby.

However, on certain occasions, direct breast feeding may be genuinely not possible. Some reasons for this include.

a) the death of the mother or if she is severely ill;
b) Unavoidable separation of the mother and baby
c) definite unavoidable contraindications to breast feeding.
d) insufficient brease milk after trying all common safe methods to promote milk flow;
e) inability on the part of the infant to suck at the breast due to low birth weight, prematurity or sickness.

The responsibility on the part of the health professional who advices other methods of feeding such as the use of bottle is very great indeed. In such cases, the concerned mother should be given clear instructions suitable for her socio-economic, educational and cultural background.

A. Types of milks: Bottle feeding does not necessarily mean the use of animal milks or commercial infant formulas, the mother or a suitable willing donor can supply her milk.

2. Fresh Animal Milks: Where human milk is not available, other animal milks most commonly used ones are from the cow and buffalo and less commonly from the goat. All liquid animal milks must be boiled and mixed with sugar because of their lower carbohydrate content. Approximately 1 level teaspoonful of sugar is added to every 100-120 ml. (i.e. 3-4 oz. or roughly, 1 small tea cupful) of milk. Fresh undiluted cow's milk and more so, buffalo's milk may have excessive fat and somewhat higher protein.

In the very young baby, as in the early newborn period, some dilution of the "whole" buffalo milk' is needed (approximately $1\frac{1}{2}$ - 2 parts of milk to 1 part of water). The water should be gradually decreased over a few weeks. In many communities, however, there is a tendency to over dilute the milk for prolonged periods. This should be strongly discouraged.

3. Commercial infant formulas: These have the disadvantage of being expensive but have the advantage of being relatively better adapted to the requirements of a young infant, they can also be made up as and when required which is a benefit in a hot climate. In general, 1 level measure (provided in the tin) of the powder is reconstituted in 1 oz. or 30 ml. of boiled water.

B. Types of Bottles:

Two main types of feeding bottles are available - the upright wide mouth bottle and boat shaped bottle. The upright type of bottle is preferred because it is easier to clean and can be conveniently placed on any level surface. Metal and plastic bottles are unbreakable but make sure that the insides are clean. Narrow mouthed "medicine" or gripe water bottles which are difficult to clean and coloured bottles which do not allow the mother to check that the interior is clean are not suitable.

Making a hole in the nipple: The best way of making a hole in it is to take a fine sewing needle fitted to a cork, make the tip red hot, plunge the tip of the needle straight into the nipple, remove it, wash the nipple and check the size of the hole.

The hole in the nipple varies according to the size and age of the baby and his sucking ability. When the bottle is for a big baby, the hole size can be such, that initially the milk comes out as a thin stream and then as drops; but for the low birth weight babies a smaller size hole is required. On inversion, there should be a rapid flow of drops and hot a stream.

C. Cleaning and sterilization of bottles:

I. Boiling Equipment Required:

-Degchi or Pan with a lid
-Bottle Brush
-Detergent

The bottle and the nipples, cover and plastic tops should be properly washed with hot soapy water using a brush. Finally, they should be rinsed with running water and boiled in a clean 'degchi' with lid for ten minutes. The nipples can be boiled separately for 3 mintutes. Ideally, the bottles should be boiled before every feed. If a mother can afford it, she should be advised to keep more bottles so that they are boiled together, thus saving time and fuel.

II. Chemical Sterlization:

The solution of sodium hypochlorite (Milton's Solution) can be used for sterilizing the bottles. One tablespoon of the solution, is added to one litre of water, bottles and nipples are soaked in it for one hour and used after draining of the fluid.

Ideally, the bottle should be sterilized by one of the above methods. In extremely poor families, where this is not possible the mother should at least wash the bottle soon after & immediately before each feed, with clean water. Salt and water for cleaning both the nipple & bottle is specially recommended in low socio-economic cases. If however, an infant gets recurrent diarrhoeas, the mother should be motivated to sterilize the bottle, explaining that improving the infant's health and saving of cost of treatment will justify the expense incurred.

D. Preparation of feeds:

Before preparing the feed, the mother should be instructed to wash her hands with soap and water and dry them with clean towel. When

dairy or cow's milk is used, a teaspoon of sugar should be added for every 100-120 ml of milk before boiling. The milk should be strained with a clean strainer into the sterlized bottle. While putting the nipple over the bottle, it should be held from the side, taking care that the tip of the nipple is not touched by the hand.

E. Technique of bottle feeding:

1) The baby should be fed by the mother in her lap with his head and shoulders raised on her hand or elbow. The mother can be seated on a low stool, or chair with arms on the bed or even on the flooor. The bottle is held in the right hand. Before starting the feed, the mother should check:

a) the hole of nipple without touching it as said above and

b) temperature of the milk. This is checked by allowing a few drops of milk to fall on the inner aspect of wrist. The milk should not be too hot or too cold; it should be comfortably warm.

2) The nipple should be gently applied to the infant's lip. The baby will generally open his mouth and begin to suck.

3) It should be checked that the nipple is on the tongue and not under it.

4) The bottle should be held obliquely (not horizontally) in such a way that tip of the nipple is always full of milk to avoid excessive swallowing of air.

5) Once the bottle is in the baby's mouth, avoid twisting it as it might injure the mucous membrane.

6) In the middle of the feed, if necessary remove the bottle from baby's mouth by gentle pressure on lower jaw and hold the baby against the shoulder and gently rub his back until he brings out the wind (burping). Then the rest of the feed can be given.

7) Once the baby stpps sucking, he is burped again.

8) The baby's mouth should be checked at the end of feed to ensure that he has swallowed all the milk.

9) The baby should never be left alone with feeding bottle in his mouth.

10) In no instance should a baby be forced to take more than he desires.

11) After the feed, the baby should be made to lie prone (without a pillow) or in right lateral position to facilitate the emptying of the stomach).

12) After the feed, the bottle and nipple should be rinsed in water immediately and kept aside for proper washing later.

F. Amount of milk and frequency of feeds:

No strict feeding schedule or any definite amount of milk is recommended for normal healthy babies. The emptying time of the infant's stomach may vary from 1 to 4 hours, thus considerable difference in desire for food may be expected in the infant. Ideally the feeding schedule should be determined by the infant himself and the figures noted below are rough guidelines.

The caloric requirement of a full term infant is 110-120 calories/kg during the first few months of life. Individual variations are significant and for many infants intake is in excess of caloric need. Fluid requirement ranges from 150-200 ml/kg/day. The requirement may be increased during the hot weather.

Most of the fluid required is being provided in milk, but some water may have to be given in summer, especially with artificial milk. The interval between the feeds differs considerably among infants. In general, it ranges from 3-5 hours, with an average of 4 hours, for full term healthy infants. Small and pre-term infants may prefer feed at 2-3 hours intervals for the first month or two throughout the 24 hours period.

G. Quantity of milk per feed:

The fluid requirement increases from 50-60 ml/kg/24 hours on the first day to 150-200 ml/kg/24 hours by the end of the first week.

A rough guide is given below:

Age	Average amount of milk per feed
1 - 2 weeks	2-3 oz (60-90 ml approx 1/2 cup)
3 weeks - 2 months	3-4 oz (90-120 ml approx 1 cup)

Put a little more milk in the bottles than the infant is expected to take to ensure that he gets enough. If the baby is contented, sleeps well and is gaining weight, it means that he is being adequately fed.

H. Some problems with bottle feeding:

Sometimes, a baby may be hungry, yet when he is offered a bottle he may push it away. This may be due to a blocked hole in the nipple or the milk may be too hot or too cold or too sweet or the reverse. All this should be looked into. If fresh milk is not strained, the hole may get blocked by small pieces of cream. If the hole in the nipple is too small, the baby may take very long to suck (normal time 10-20 minutes) and get exhausted. If the hole is too big he may cough or splutter during feeding or even get choked.

I. Alternatives to the use of a bottle:

The expense and effort involved in the proper use of a feeding bottle has resulted in the use of other feeding devices, some of which are listed below. However, it is to be remembered that these too have to be adequately cleaned.

1) Cup ('Katori') and Spoon): wherever breast feeding is not possible, feeding from cup (Katori) & spoon is prefered to bottle. These items are readily available, are cheap and easy to clean. Ensure that only small amounts of milk are introduced into the mouth in order to avoid aspiration.

A dropper is extremely difficult to clean and in general is not advisable. The practice of dipping cotton wool or cloth into milk and squeezing it with the fingers into a baby's mouth is very dirty and should not be done.

As can be observed, administration of bottle and other types of feeding are difficult and particularly fraught with dangers in a developing country. Hence all attempts must be made to promote breast feeding.

USE OF EXPRESSED BREAST MILK

Dr. Indira Narayanan

Introduction:

In India, while many women do initiate breast feeding, certain high risk infants may be denied this advantage. Among these are low birth weight or preterm babies who are unable to suck directly from the breast. This is partly due to the ignorance of the mother and attending health personnel. It may also be due to the fear of introduction of infection. The potential risk of contamination is naturally higher when dealing with poor uneducated women. Recently, however, studies in India have shown that provided certain basic precautions are taken, administration of expressed breast milk (EBM) is associated with less infections than with formulas.

Inspite of there being a large number of high risk babies in India, there have until recently, been no organised reports or guidelines for the use of EBM. There are also a number of problems in establishing conventional milk banks as is being done in advanced industrialised countries.

Difficulties encountered in the establishment of conventional human milk banks in a developing country:

1. A significantly large number of mothers of high risk infants belong to the low socio-economic group and are uneducated. It would be

unsafe in such cases to follow the practice adopted in advanced countries of permitting a mother to collect the milk at home and transport it to the hospital where the baby is admitted.

2. The climate in the tropics is unfavourable and maintenance of an adequate "cold chain" from collection to administration is very often difficult in developing countries.

3. Bacteriological monitoring of samples of milk is not likely to be feasible in most centres.

4. Holder pasteurisation (62.5°C for 30 min.) may not be practical in all units as very careful monitoring of the temperature is essential.

Yet, inspite of the above problems, the need for human milk is actually greater in such centre and hence modified 'banks' are essential.

Practical guidelines for the use of expressed human milk for high risk infants:

1. In the neonatal special care units, collection of milk should, as far as possible, be supervised and the mothers must be given clear instructions. Hence it is best done in a room attached to the unit itself.

2. The mother should be instructed to wash her hands and breasts with soap and water each time and preferably wipe the breasts with boiled swabs. Antiseptics, such as "Savlon' are best avoided. The milk should be expressed manually into sterile containers.

3. Milk samples should be retained in their individual bottles and not pooled by pouring into a common container. It is convenient to use sterile wide-mouthed feeding bottles available in the nursery. The nipple and screw cap can act as a cover and a fresh one can be applied if the baby can suck from the bottle. For gavage feeds the milk can be taken up directly from the bottle into the sterile syringe.

4. The milk should be consumed as soon as possible after collection. It is also practical to store it in the refrigerator under the freezer compartment for the evening and night feeds.

5. Nursing mothers, who themselves have infection, should not donate milk for other infants.

6. In hospital situations, random samples of milk should be sent for bacteriological analysis, preferably daily.

7. Expressed human milk is of particular importance in the home care of low birth weight and high risk infants until the latter are able to accept direct feeding. Hence all peripheral field staff should be taught how to express milk in a clean manner, so that they can

motivate and teach the mothers. Milk should be collected directly in the sterilized container used for feeding, provided it is a wide mouthed bottle or a 'katori'. Additional milk can be procured from a willing healthy lactating friend or relative who has extra milk.

8. As in some women the milk flow tends to decrease as manual expression continues over a few days, additional stimuli can be obtained by permitting the baby to suck for short periods intermittently as he grows stronger. Direct breast feeding should be started as soon as possible.

9. Expressed milk is also of benefit to a working mother belonging to the middle or higher socio-economic group when a refrigerator is available. Milk at times can be expressed and kept in the refrigerator and utilised during the periods when the mother is not available for feeding.

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SUPPLEMENTARY FOODS AND WEANING OF INFANTS

Simin F. Irani

For successful infant feeding, the diet should be adequate in terms of total calories, fluid content and bulk. The intake of essential constituents should suffice to cover the infant's current needs and enable him to meet the stresses of daily life and to fulfil his genetic potential. The baby should be encouraged to establish a feeding regimen which will satisfy his hunger and keep him contented, and this in turn should lead to a healthy appetite throughout childhood.

An infant should be entirely breastfed upto the age of 4-6 months, as the nutrient oontent and the quantity of breast milk is adequate for the satisfactory growth of the child in this period. Semisolid food should be introduced after this period so as to supply additional proteins, carbonhydrates, introduced after this period so as to supply additional proteins, carbonhydrates, vitamins and minerals required for further growth of the child. For this, good feeding practices should be established else the child might develop protein energy malnutrition. In India, this period is often very protracted, extending over months, or years when the child is having both exogenous food and breast milk.

Because of a poor knowledge on the part of the mother regarding nutritional requirements of the baby, the period between 6 months - 2 years is one of perpetual hunger. In this period there is danger of diarrhoea and infection, where the well being of the infant is influenced by the infant's age and its nutritional status.

Local foods and their preparation:

A good knowledge of local foodstuffs is essential. This could be sought from local medical doctors,nurses, midwives, health and agricultural workers, and from the people themselves. Seasonal variation in the food supplies should be understood. The prices of food must be known so that they may be related to income.

The availability of some foods is particularly important:

a) Animal milk of any kind - fresh or powdered from cow, buffalo or goat.

b) Locally available sources of animal protein, including their seasonal variations, specially eggs, fish and meat.

c) Foods rich in vegetable protein specially pulses and groundnuts.

d) Dark green leafy vegetables rich in protein, vitamins and minerals.

e) Fruits rich in Vit. C. like Guava and sweet lime.

Methods of cooking including the types of fuels, grates and utensils, meal patterns of adults, local weights and measures must be known. In infant feeding the knowledge of the capacity of the cups, bowls and spoons too must be known.

This may be attempted by multimixes in which the staple is prepared with a local source rich in plant protein (usually a legume), small quantity of animal protein and if possible dark green leafy vegetables.

Introduction of Semisolid Foods:

There are some cultural beliefs in different parts of India regarding the suitable time for starting semisolids. The period between 6 months - 2 years has various problems related to feeding.

The uneducated parents have poor knowledge about the nutritional requirements of the baby. It is difficult to persuade mothers to use the available foods in the second semester of life because of the rising costs and a limited food supplies. It is necessary to win over the grand mothers, in order to make the feeding practice succeed. The beliefs in hot and cold foods, heavy and light food must not be condemned outright. Other alternative food stuffs must be advised, which are equally nutritive.

If a child refuses certain food do not offer that for few days. Arguments, force feeding, frightening and beating only leads to food problems later on. Allay the prejudices and fear of the mother and the grand mothers.

The confrontation may come from the local community feeding practices It is important to know the local cultivation, local resources, the multimixes, diet practices and the local infections of the area.

Nutrition education must be guided by a detailed knowledge of the indigenous meal pattern and intrafamilial food priorities. Information is

needed on the social structure of the community as to who in the family or community have the power of decision regarding the introduction of semi-solid foods. The economic or social forces that may frustrate or promote efforts to improve the situation should be studied.

Breast feeding should be continued as long as possible. However, there are reasons why semisolids are introduced during the first six months of life. This is to supply vitamins and minerals not present in the breast milk, to provide additional calories and to accustom child to new flavours. When the child is four to six months old he should be given porridge alongwith breast milk. This can be prepared from local cereal either rice, wheat ragi or maize. When the child is eating well he can have his porridge 2 or 3 times a day. After six months of age the child should be given body building protein foods like pounded groundnuts, mashed skimed beans, dried skim milk, peas, potatoes or dark green leafy vegetables. Vegetables and legumes can be boiled together or steamed and served in a semisolid state. At 7-10 months the child should take in staple mixes or Quadrimixes food, a variety of household diet can be served 4 or 5 times a day. Combination of rice legumes and dark green leafly vegetables are popularly given. A thin roll or bread slice softened in milk or dal or gravy should be given. A child can sit up and is beginning to teeth by this time. A crisp roti or biscuit should be given. A child should be encouraged to feed himself and it is better to use a spoon until he is old enough to use his fingers well.

In communities that have neither the facilities nor incentives to prepare separate dishes for their young children, the softer, more protein rich portion of adult diet should be given to infants as the weaning food aparts from breast milk.

By 1-1½ years the child should be eating solids and should be encouraged to give up breast milk gradually. If a child is eating all kinds of food he should have 3 good protein meals a day. If he is hungry in between meals he should be given food e.g. snacks may be given e.g. groundnut, porridge, bread or anything which the family has.

The best way of planning a nutritious village level semisolid food is as a mixture of ingredients, designed to complement and mutually reinforce one another, in particular to ensure intake of full range of essential amino acids at the particular meals.

With this principle in mind, 3 types of mixtures can be considered. All are built around the staple, with the addition of one or two or three foods. These are known as double mixes, triple mixes and quadrimixes.

Village level Multimixes

Type of mixture	Ingredients
Double mix	Staple + Legume or Staple + animal protein or Staple + dark green leafy vegetables
Triple mix	Staple + legume + animal protein or Staple + legume + Dark green leafy vegetables or Staple + animal protein & dark green leafy vegetables.
Quadrimix	Staple + legume & dark green leafy vegetable + animal protein

Principle: The main source of calories in a village level weaning food will be the local staple. If culturally acceptable a cereal should be employed in preference to a tuber or plain.

Legumes: Protein is provided mainly by legumes. Selection will depend on local availability and cost, cooking properties and apparent digestibility and cultural attitudes as to suitability for young children. Legumes should be cooked well and to overcome the poor digestibility of partially cooked legumes, skin must be removed from dried red beans before cooking, by soaking or scalding or after cooking by sieving.

Dark Green Leafy Vegetables: They are excellent source of carbtene, Vit. C, Iron and Vit. B. Complex.

Animal Protein: is in short supply and it is important to use it advantageously with attempts to use available animal proteins into semisolid feeds.

Introduction of Semisolid Food is Undertaken in 3 phases:

First Phase: Obtain information regarding locally available and acceptable protein rich foods in a sample village. Information should be collected from village headman, village teachers, landlords and shopkeepers.

2) Survey of regional practice in use of semisolid foods to children between 6 months and 3 years. Information should be collected from mother or nearest relative of the child.

Second Phase: is based on 3 types of recipes:

1) Recipes should be easily prepared, fresh at home daily by the mother.

2) Ready to consume infant food mixtures which could be made by mother at home in bulk quantities and used as and when needed.

3) Recipes like biscuits, coffees, etc., which could be prepared on a commercial basis by local tradesmen and sold in village shops.

Third Phase: This is concerned with the development of ways and means of propagating the use of these recipes by the local population, and so supplementary feeding programmes should be organised at each centre.

Reasons for Introducing Solids Foods:

Insufficiency of breast milk, illness in the mother, working mothers, subsequent pregnancy or death of the mother, the desire to give additional food to some children and rarely the ability of the child to pick up and eat solid foods, govern the choice of introduction of solid foods.

Acceptability of Recipes:

Criteria to determine acceptability of recipes, can be

a) Ceiteria for acceptability by children:

1. The percentage of children who refuse the recipe should not exceed 25.

2. The child should consume the amount which provides 300 calories and 6-8 gms protein. This amount should be consumed in addition to their present diet.

b) Criteria for Acceptability by mothers:

1. The mother should like the taste of the recipe

2. The method should be simple and not take more than 15 minutes to prepare.

3. The preparation should remain well for at least 12 hours after preparation without developing an odd flavour or an odd taste.

4. Child should not have side effects like vomiting or diarrhoeas.

Methods to Popularize use of recipe among Rural Community:

This should be in the form of supplementary feeding cum nutrition education programme designed to demonstrate the beneficiary effects of supplementary feeding on the health of the children in the community. This programme can improve the nutritional status of the children and also correct some wrong beliefs held by the mothers with respect to feeding of their infants.

Breast feeding and good infant feeding practices can make an important contribution to the well being and development of children with effect lasting into adulthood.

In order to significantly improve feeding practices in infancy, it is necessary to convincingly modify the knowledge and attitudes of the grand old ladies of the area. The school level education for girls needs inclusion of base line knowledge of breast milk, colostrum and proper feeding practices. At the same time the community health workers, village level workers, anganwadi workers of ICDS and all other middle level workers must be trained and convinced about the advantages of starting semi solid and solid foods in sufficient quantity and at the appropriate time. They must be taught that traditional feeding utensils like Katori or Cup and spoon are better suited than the use of bottles.

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LACTATIONAL AMENORRHOEA, BREAST FEEDING & CONTRACEPTION

Dr. A. Chakravarty

Breast feeding has a vital effect on child spacing especially in a country like ours, where the availability and acceptability of contraceptive measures is limited in rural areas and amongst lower socio-economic groups. Breast feeding is an important factor in determining the duration of post-partum amenorrhoea. The traditional belief that breast feeding protects women against next pregnancy and is associated with longer post-partum amenorrhoea has been confirmed by several demographic studies during the last two decades. Erosion of breast feeding practices have led to a shorter period of post-partum amenorrhoea and decreased birth intervals among populations of developing countries where effective contraceptive practices are still not satisfactory in the lower socio-economic group. By reducing the probability of ovulation, breast feeding contributes to a lowering of the rates of conception.

Breast Feeding and Birth Intervals:

The women of the "King Hunters" tribe have fewer children than any other women in human societies that do not practice contraception, and maintain a population growth at 0.5%. But when they settled in villages, have sedentary work and weaned their children early to cow's milk, the birth interval decreases by 30% in this tribal population. Studies carried

out in India and neighbouring countries confirm the dominant effect of breast feeding and associated prolonged amenorrhoea as the factor accounting for the long birth intervals observed Women who breast fed the infant for 1-2 years and practiced no other contraception had birth intervals, 5-10 months longer than those who did not breast fed.

Pregnancy rates in lactating women are much lower than in non-lactating women at 9-12 months post-partum. The fertility reducing effect of lactation lasts less than one year. It has been suggested that breast feeding prolongs birth intervals by 4 months in urban areas and by 8 months in rural areas. Several non-nutritional factors, like cultural, social, psychological and family structure etc. determine the duration of breast feeding which in turn determines the duration of post-partum amenorrhoea and the anovulatory period. It has been estimated that breast feeding in urban areas of developing countries annually provide 3.4 million couples a protection against fertility, while for rural areas the estimate is ten times higher.

Lactational Amenorrhoea:

The duration of post-partum amenorrhoea follows the pattern of breast feeding very closely. The duration of lactational amenorrhoea tends to be longer in older parous women who practice prolonged breast feeding. Mothers practising on-demand and full breast feeding of long duration have longest post-partum amenorrhoea. In an urban study, duration of lactational amenorrhoea was 7.26 months in mothers who breast fed the baby for 10 months or more as compared to 1.62 months amongst those who did not breast feed the baby at all.

A multifactorial mechanism involving prolactin, gonadotrophins and catecholamines has been implicated for delayed return of post-partum menstruation in lactating women. Suckling by the baby leads to inhibition of the secretion (1) of prolactin inhibitory factor (leading to increased Prolactin secretion) and (2) of Gonadotrophin Releasing Factor, which in turn, does not stimulate the secretion of Follicle stimulating and Lutenizing Hormones from the adenopypophysis. In the absence of FSH & LH, Cyclical ovarian changes leading to ovulation and restoration of menstrual cycle, do not take place. The mother of a breast fed infant therefore, has a prolonged post-partum or lactational amenorrhoea. Absence of menstruation alone does not necessarily mean absence of ovulation, a lactating mother may conceive during lactational amenorrhoea.

Maternal Nutrition:

Improvement in maternal nutritional status is associated with decreased birth interval and duration of lactational amenorrhoea. Duration of lactational amenorrhoea was significantly longer in women who weighed below 40 kg as compared to those who weighed above 55 kg, no such influence of maternal weight was observed in women who failed to lactate. Supplementary food to the expectant mother during the last trimester and to the infant in first 9 months tend to diminish the duration of lactation amenorrhoea. It is apparent that both supplementation programmes acts independently to decrease duration of amenorrhoea. Supplementation of infant's diet in a well nourished mother with enough milk will reduce the sucking stimulus to breast, thereby reducing the concentration of prolactin and an early resumption of ovulation. Hence, when giving supplements to target groups in M.C.H. programmes, breast

feeding should be advocated and all these women should be motivated to use effective contraceptive by 4 months post-partum. All feeding programmes should be aimed to promote breast feeding and not to replace it.

Contraceptives and Breast Feeding:

Conception rates during lactational amenorrhoea varies from 7 to 9%, irrespective of duration of breast feeding and lactational amenorrhoea. It is not safe therefore, to rely on breast feeding alone as a contraceptive. Theoretically a woman can concieve five weeks after delivery.

Ovulation remains suppressed during post-partum amenorrhoea. On an average two anovulatory cycles follow the resumption of menstruation. Yet it is not easy to predict the return of ovulation, it can precede first post-partum menstrual cycle by 2 months. Lactating mother therefore should be encouraged to use other methods of contraception, like Nirodh, I.U.D. which do not affect lactation. Although oral pills, have been presumed to decrease production of breast milk and were not conventionally advocated for breast feeding women in first 6 months, a recent study emphasized the composition and volume of breast milk of such mothers showed variations within normal limits, as large variations are seen even in non-contraceptive using women. No adverse effects have been noticed in the nursing infants as a result of progestational agents taken by the mother.

Other Factors:

Other facts like maternal age, parity and education in relation to breast feeding, lactational amenorrhoea and its contraceptive effect have been studied. A trend towards shorter period of breast feeding and amenorrhoea has been observed in economically well off educated women. Older multigravida women have longer duration of lactational amenorrhoea. Reduced infant mortality is associated with increased birth spacing provided the infant is breast fed. Duration of post partum amenorrhoea is 2 months following still birth or neo-natal death.

Exclusive breast feeding is the most important factor contributing to lactational amenorrhoea and this in turn reduces the chance of next pregnancy. Prolonged breast feeding decreases the probability of ovulation thereby decreasing the rates of new conceptions at the community level, but it is not a reliable form of birth-spacing at the individual level.

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PROMOTION OF BREAST FEEDING

Dr. Indira Kapoor, Dr. H. Sehgal,

A. INTRODUCTION:

It has been proved beyond doubt that breast milk is a complete food for the baby upto 4 months of age. Mother also has a distinct advantage with breast feeding. The milk for the baby is free of cost, safe, wholesome, available during day and night. It does not require any preparation before feeding, no bottle, no boiling, no extra work or extra money. Moreover, it creates a special bonding of love and affection between the mother and the child.

The available literature on infant feeding practices has confirmed the decline of breast feeding over the past years. This downward trend is seen more with educated mothers, higher the education, greater the incidence of bottle feeding. Numerous studies have shown that in India, the problem is not so much in relation to acceptance of breast feeding but it is in relation to:

1. Giving the first feed on 3rd or 4th day of birth, i.e. discarding the colostrum.

2. Starting additional bottle feeds within 4-6 weeks after birth.

3. Stopping breast feeds too soon i.e. within 3 months of age, or

4. Continuing it for too long without adding any semisolids to the infant diet at the appropriate time.

Various reasons, apparently misconceptions are given by the mothers in justification of the above:

1. Absence of milk secretion during the first 2 days.

2. Colostrum is not proper for the baby.

3. Insufficient secretion of breast milk.

4. To give the habit of bottle to the baby.

5. Bottle milk is better than breast milk.

6. Mother's milk does not suit the baby.

7. Inconvenient to working mother as the working place of the mother is away from home.

From numerous studies conducted in the urban and rural situations, it is apparent that a lot of additional information based on scientific studies need to be given to women on breast feeding. A young mother is always a willing listner and learner since she values her child's health and well being

above everything else. Breast feeding should be promoted for reasons related directly to infant nutrition and health.

B. SCOPE & SITUATION FOR HEALTH EDUCATION

As malnutrition is the single most important problem in our country, the feeding of mother and young child is crucial. A right emphasis has to be given to the diet and nutrition of pregnant and lactating mother and the young baby. It has been shown that a number of food stuffs are avoided by the young mothers during pregnancy and lactation period. Foods like pulses and dals along with meat and eggs are considered hot. Foods, like tamarind, bannanas, lassi etc. are avoided as they are cold and sour and would give a cold to the infant. Brinjal, and potato are also avoided as they are gas forming for the mother and the infant.

A number of world wide studies suggest that poor nutritional status diminishes the volume and probably the fat and vitamin contents of breast milk, The nutrition of a breast feeding mother need special attention more so in mothers having pregnancies in a quick succession.

Nutritional education for pregnant and lactating mothers in such cases, would be of great importance for the health of the mother as well as the infant. Scope of giving this education in ante natal, post-natal and well baby clinics at primary health centres, sub-centres and urban hospitals and clinics is tremendous. Another, very effective way of health education on breast feeding could be during home visiting by the female peripheral staff.

Thus there are plenty of situations where this education can be given. The two main groups for whom special health educational material is needed are:

a) Professional level educators-doctors and para-medical people.

b) Community groups - both in urban and rural areas.

The approach to these two groups of learners is entirely different. Education at the community level is entirely information oriented and basically for knowledge in breast feeding whereas at the professional level it involves another major issues, which would necessitate sessions on motivational type of exposures.

C. HEALTH EDUCATION AREAS THAT NEED SPECIAL STRESS

1. Motivation for professionals and para-professsionals:

Since the demand for education on breast feeding from the community has not been pressing, the medical and para medical professionals have not appreciated the need to supply this information. Most of the health professionals themselves are not motivated enough to teach about breast feeding, since they feel there are more pressing problems needing their attention. Health education is not one of the favourite activities of the professionals and does not enjoy a high priority on our list of functions. It is desirable to change this attitude, if positive changes in attitudes towards breast feeding in our community are desired.

All the professionals have to believe in the fact that breast is the best for an infant. Then only can they have the motivation to teach the community about breast feeding.

It is essential to cultivate a conviction and motivation in our professionals to use every opportunity to educate and encourage young mothers and the community in breast feeding practices. The educational material which would help to generate this kind of response, has to be thought provoking and challenging.

2. Availability of scientific Information:

In modern times, medical information is modified very rapidly. Professionals have to catch up to the latest knowledge with the same speed.

Role of workshops and Seminars:

Medical professionals have themselves to be convinced that breast feeding is advantageous both for the mother and infant. Special educational workshops like the present one need to be held at regional levels to stress the point and to create a positive environment for the acceptance of the subject. Bibliograph of about 600 medical papers is being distributed as future reference material for all the participants. Arranging education sessions would not require additional finances and can be easily carried out in a decentralised manner in all the peripheral training and in service institutes.

Need for Informative Publications:

Educational material needed for the professionals and para-professionals to motivate community groups would be the factual information stressing the benefits of breast feeding to mother and infant.

In addition, good booklets and leaflets can be prepared and distributed to all the medical officers of Primary Health Centre and peripheral level workers like Lady Health Visitors, ANMS, trained Dais and female community health guides.

Importance of Local Surveys:

Professionals and para-professionals would also need information on the various aspects of breast feeding patterns and trends in the community they are serving. Simple field surveys on following aspects could be easily taken up by the professional staff involved in community oriented research.

1. Simple KAP (Knowledge, Attitude, Practice) studies on breast feeding in different communities.

2. Role of indigenous dais and trained dais in breast feeding education and breast care to mothers.

3. Information on the average duration and percentage of breast feeding.

4. Type of breast feeding-scheduled or on demand feeding with or without night feeds, with or without other feeds, frequency and intensity of suckling.

5. Myths and misconceptions in the community about breast feeding.

6. Information of food habits of pregnant and lactating mothers.

Stress during Inservice Training Programme:

Peripheral health workers should know about breast feeding techniques so that they can teach the 'art of breast feeding' to women. Several surveys have shown that workers are often mis-informed about breast feeding, nutrition of vulnerable groups and other related topics. In India, a number of training programmes under integrated health and community health guides schemes are being held nationally for multipurpose workers, community health guides and indigenous dais. All these groups could be exposed to session on breast feeding and related topics. The requisite teaching aids available for peripheral workers at Primary Health Centre, Sub-centre and urban clinics and can be utilised for the purpose.

Integrated Session with Sex & Population Education:

Breast feeding education should become a part of the sex and population education programmes in schools and colleges in urban areas where such education is being given.

Use of Booklets, Leaflets etc.

For literate or semi-literate urban women, simple folders, booklets and leaflets on breast feeding can be very successfully used. A leaflet on infant feeding could be translated into Hindi and other regional languages, for distribution to literate women in urban and rural field areas. These are specially valuable for explaining the details to the women and are also useful for generating acceptance of the concept of breast feeding or establishing a positive attitude, for these one to one contact or a small group discussion is likely to be more effective. The booklets on the topic have a significant role to play as the distribution can be restricted to specific groups and have enough space for illustrations and details. Published material can be kept by the women and referred to later, if some of the information is forgotten.

Bulletin Boards is a very effective aid in exhibiting various kinds of illustrations, books, booklets, cartoon etc. from different sources.

Magnetic Display Board: A special magnetic display board has been prepared by FWFRC Bombay. It has been pretested in the field areas and has shown positive results. This magnetic board display set has 38 cut outs. The choice and selection of the display items depends on the group concerned and the objective of the educational talk. With this aid, talks on many topics like breast feeding, addition of semisolid foods, nutritional needs of a toddler and preparation of various foods have been covered.

Evaluation of Educational Aids used for Breast Feeding:

As already stated, pre-testing of an audio-visual aid is very important. For the education of community groups, one has to find out the literacy rate of the community. Impressions about the visual literacy of the groups is essential, especially a knowledge about the previous exposure to such kind of education material. On pre-testing a pictorial manual on training of dais in rural field area, it was learnt that some of the indigenous dais of the interior had never seen a coloured drawing, leading to erroneous misinterpretation of the drawing of a woman in lithotomy position being regarded as the woman being on a swing.

Assessment of suitability of an aid to a group, professionals para professionals or community has to be one by matching the aid with the audience is essential. All the aids used, should also lead to some kind of evaluation which is directed:

1. To evaluate the acceptance of the aid.

2. To evaluate its effectiveness of the change acomplished, i.e. did the talk and the aid accomplish what was intended.

1. Acceptance of the Aid:

Educational material is most effective in a small group aided with a guided discussion and a question answer session. A good method of educating the community could be to use few of the community leaders in preparation

of simple aids like the display material for magnetic board. Such an activity may even become income generating for the community later on.

2. Effectiveness of the aid:

It is also important to monitor the response in relation to the change desired either informally or through formal channels and surveys after the educational sessions. Since breast feeding education has not been taken up earlier with an educational evaluation in mind, it is necessary to identify resistance and un-anticipated problems that may arise, in relation to the community response that is helpful e.g.

a) Are the ante-natal women exposed to breast feeding more likely to breast feed and for longer duration?

b) Do these mothers talk to other community members on breast feeding?

The promotion of breast feeding is not difficult with Indian mothers and the community. There are many factors influencing breast feeding that health workers can change. The main aim in the health educational strategy in breast feeding in India should be:

a) To preserve breast feeding in our rural communities with added scientific information and

b) To encourage and facilitate the practice of breast feeding in the urban areas starting with the education of pubertal and young girls in schools and colleges and if possible with the help of local youth.

INFANT FOODS AND BREAST MILK SUBSTITUTES POLICIES AND PERSPECTIVE

Dr. P.C. Sen,

It was only after the 19th Century that alternatives to mother's milk as animal milks were used and then the difference in the mortality rates between breast fed infants and artificially fed infants became apparent. The development of commercial infant formulas and their widescale propagation has resulted in an increased adoption of artificial feeding with increased susceptibility towards malnutrition and infection. Realising the importance of the natural feeding procedure, considerable attention is now being given towards the protection of breast feeding, not only in terms of education regarding the benefits of breast feeding but also providing ways and means to the mothers to enable them to breast feed their children.

There is not yet a separate National Policy for Breast feeding though as a matter of principle the Govt. of India has agreed to the proposals for WHO/UNICEF recommendations on the infant and young child feeding. A working group was established under the Ministry of Social Welfare and the working group has submitted a report on production and marketing of infant foods to enable the Govt.of having a legislation to this effect.

For preparing a National Policy on Breast feeding a few aspects are to be considered. Some of them have been highlighted in the following paragraph.

Education

Objective: To increase awareness and appreciation of the value of breast feeding with promotion of maternal and infant nutrition and overall breast feeding in the community.

The Govt. should provide adequate nutrition training in medical and nursing school, training to primary health care workers including midwives, school teachers, rural extension worker. Information should also be provided to individuals influential within the family, such as fathers, grandparents and community teachers and religious leaders.

Strategy:

1) Basic and continuing education and training for health services staff at all levels, with special emphasis on management of breast feeding, utilisation of culturally acceptable, locally grown foodstuffs for weaning foods and supplementary foods for pregnant and lactating women.

2) Strengthening all curriculum with up to date knowledge in maternal & child nutrition. Incorporating this information in school and college curriculum.

3) Development of manuals and various aids for nutrition education as well as the various channels of communication.

4) The following points should be included in the information provided:

a) Benefits and superiority of breast feeding.

b) Maternal nutrition during pregnancy and lactation.

c) Preparation and maintenance of breast feeding

d) When needed, the proper use of infant foods with their social and financial implications, health hazards of inappropriate foods and feeding methods.

e) The proper age at which supplementary foods would be introduced.

f) The locally available foods and the different combination which can be used.

Support of health services:

Health services staff has an important role to play in the initiation, establishment and maintenance of breast feeding.

1. All health personnel should receive the correct and up to date information and training on breast feeding.

2. Hospitals and maternity routines should be such that they promote feeding colostrum and continue breast feeding.

3. Facilities of the health care system shall not be used for promoting artificial feeding in any way.

4. Only when absolutely necessary feeding with infant foods will be demonstrated by the health workers and the information given shall include a clear explanations of the hazards of improper use.

5. Information provided by manufacturers and distributors to health professional regarding infant products should be restricted to scientific and factual matters, no financial or material incentives to promote the products should be offered either directly or indirectly.

6. Where it is culturally possible, establishment of milk banks should be considered.

Appropriate Marketing and Distribution of Breast Milk Substitute:

Objective: To minimise and monitor the promotion of commercial baby foods to safeguard the promotional activities.

Strategy:

1. There shall be no advertisement or any form of promotion of infant foods.

2. There shall be no free samples, discount coupons, premiums, special sales for promotional purposes.

3. The marketing personnel shall seek no direct or indirect contact with pregnant women or with parents of infants and young children.

4. No facility of the health care system shall promote these products.

5. Correct scientific information is to be provided to health personnel, who will guide the mothers when absolutely necessary, about the correct procedure of artificial feeding and the health hazards involved in case proper precautions are not taken.

6. Labels shall be designed to provide the necessary information about the appropriate use of the product and shall in no way discourage breast feeding.

7. Products such as sweetened condensed milk etc., which are not suitable for infant feeding shall not contain instructions on how to modify them for infant feeding.

8. The product shall have to comply with the standards laid down by the Govt. in order to maintain the quality.

Promotion and Support of Appropriate Weaning Practices:

Objective: To encourage supplementation by 4-6 months of age using locally available foods.

Target: Mothers
Health professionals
Weaning food manufacturers.

Strategy:

1. Encouraging increased production of goods suitable for weaning.

2. Development and demonstration of receipes for home made weaning foods.

3. Development of multi-mixes for distribution and subsidising the cost of the same.

4. Providing assistance to families in need.

Health & Social Status of Women:

Objective: To provide facilities for women to enable them to breast feed their children.

Target: Women
Employers
Voluntary associations.

Strategy:

1. Guidance regarding nutrition and related health aspects to mothers.

2. Special leave benefits for working mothers with full pay.

3. Creating more opportunities for part time for women.

4. Establishment of creches and day care centres near the place of work.

5. Providing supplementary nutrition during the third trimester.

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ORTHODONTIC ASPECTS OF BREAST FEEDING

Dr. K. Bhargava

Many Orthodontists believe that breast feeding has more beneficial effects upon the development of the jaws than bottle feeding as it involves more compression than actual sucking ensuring plenty of exercise necessary for proper development of the infants jaw. It has been suggested that bottle feeding requires more sucking action than does breast feeding (where the action is more squeezing in nature). The compression by the muscles of the cheek during the act of sucking in bottle feeding plus the mechanical influence of rubber teat on the anterior part of developing jaws is likely to create a narrow upper arch which is prolonged anteriorly. A breastfed child therefore would have a broader mouth, better spaced teeth and less nasal obstruction than the bottle fed child and would not have a high gothic arched palate. Moreover, improper bottle feeding is the cause of many abnormal swallowing habits and may lead to thumb sucking and other similar habits.

The ability to feed from the breast is present in the new born child, although for the first few days the muscles are often unable to sustain their action for a long period. At birth, the infant is capable of performing certain basic reflex actions including deglutition. The behaviour of the muscle concerned with deglutition is rigidly controlled by a series of strong reflexes, and can be useful adjunct to proper development of structures.

During feeding, the nipple is drawn into the mouth by a negative pressure. The nipple is enveloped by the upper lip and palate above and the tongue below, lying over the lower gum pads and protruding between the nipple and the lower lip. A large part of the nipple is drawn into the mouth to ensure that the milk is delivered to the back of tongue. By means of rhythmic waves of pressure from before backwards produced by the tongue and the mandible, milk is expressed from the nipple in a stream on the back of the tongue. This is aided by a certain amount of suction. During the action, regular breathing continues. The milk is prevented from entering the larynx by the high position of opening of larynx, the well formed aryepiglotic folds and by deglutition apnoea. The movement of the tongue and those of pharynx seem to be independent of each other. The tongue is used merely to express the milk from the nipple and is unable to collect milk from the mouth and pass it to pharynx. Any excess milk in the mouth dribbles down the chin. Later, however, the ability to control the food within the mouth is acquired. At rest, the tongue lies between the upper and lower gum pads. After the eruption of decidous teeth, the tongue at rest is usually confined to the lingual vestibule; that is the part of mouth enclosed laterally by the teeth when in occlusion and the alveolar process; the palate above, and the floor of the mouth below; posteriorly it is continuous with the pharynx. By the age of5 years, most children retain the tongue within the lingual vestibule during the swallowing.

The breast fed baby does not run into the problems that the bottle fed baby does. First of all the breast fed baby is pressing against the breast during the sucking act with the nose, lips and cheek. The teat is between the gum pads and his lips, thereby allowing the tongue to be placed

in the proper position for the normal act of deglutition. By the use of normal tongue action, the baby can direct the milk into the back of pharynx. This act, along with the controlled amount of milk that enters the mouth will aid the child in a proper swallowing habit and help the child to avoid thumb sucking or finger - sucking habit.

The sucking reflex has two primary functions (I). The ingestion of food and therefore the relief of hunger, and (2). The satisfaction of oral eroticism necessary for healthy personality development in infants. Unlike other parts of the body, the mouth not only develops reflexes but also eliminates those already in existence. Failure to abandon these might result in abnormal behaviour of the muscles concerned. With growth in an environment, in which the infants psychologic needs are met, the personality develops through successive stages during which old sources of pleasure are used less as new and more mature ones develop. If, however, the instinctual needs are frustrated to a degree beyond the infants limits of tolerance or the infant endures other types of psychologic trauma, he may become fixed upon a current type of erotic pleasure of an earlier stage of development like thumb sucking.

The development of inherited growth pattern of skeletal structures can only manifest itself in the presence of normal functional activity of the supporting soft tissues. The expanding effect of the tongue and ensuring pressure on the dental arches and palate in normal swallowing maintains and even increases the width of dental arches. Absence of this pressure as in perverted or abnormal swallowing or even complete absence of tongue may result in narrow arches and cause malpositiong of teeth.

Where natural feeding is not possible, a bottle with a broad teat simulates breast feeding more closely them one with the narrow teat.

All abnormal sucking habits result from insufficient sucking at the breast or the bottle. The sucking and associated habits (biting of nail, tongue or lip) have also been attributed to hunger and lack of opportunity for progressive movement and manipulation. These can be reduced by an increase in sucking time, use of a nipple with a fine hole for bottle feeding.

The child cannot suck and swallow properly, if the nipple of the bottle has several holes. As the milk flows it may cause the child to choke, regurgitate or spill the milk from the sides of the mouth.

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